The Iron A

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The Yale Time Lock.

The lock shown in the accompanying illustration is a piece of mechanism combining in an unusual degree beauty of construction and workmanship with permanent utility in securing valuable deposits of treasure against the use the instruments by which their purposes were effected. An instance of the utility of the roads, and the net earnings were 450 per such a lock was given a few days ago, in the cent. of the cost. The amount paid as divitelegraphic accounts of an unsuccessful attempt to rob a national bank at Barre, Vermont. The following is the account as sent to the associated press:

MONTPELIER, Vt.. July 7.—About midnight of last night the cashier of the Barre National Bank, at Barre, was aroused from sleep by four men, who, after binding and gagging his wife and daughter, and putting handcuffs on him, and a halter around his neck, forced him to accompany them to the bank and open the door.

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door.

The bank vault having a chronometer lock The bank vault having a chronometer lock set to open at 9 o'clock this morning, could not be unlocked earlier, and the robbers had to abandon the attempt to enter it. They, however, secured about \$1300 in unsigned bills, which were outside, and some \$10 in money. This done, they returned to the house with their prisoner, pinioned him to the floor, and left.

left.

The cashier succeeded in freeing himself in about an hour, and gave an alarm, and a pur suit of the robbers was immediately made, but, so far as is known, without success.

The Yale time lock, which is made by the Yale Lock Manufacturing Co., Stamford, Conn., under E. Stockwell's patent, is designed for use in connection with other locks as an additional security, and can be applied to any vault or safe door where there is a vacant space of 81/2x6 inches, without making a hole in the door or disturbing the other locks or bolt systems. The necessity for security additional to that afforded by combination and key locks has led to the invention of several chronometer or time locks, which have failed to secure unlimited popular favor for the reason that they locked the door as soon as it was closed, thus preventing all access to the vault or safe until the time for which it is locked has expired, even though the doors have been closed prematurely. The Yale time lock is free from this objection, being so arranged that it can be set to lock, as well as unlock, at any given hour. For instance, a bank using this lock may close regularly at 4 o'clock, p. m., and at this hour the doors are closed and secured by means of the dial locks. The time lock is set to lock at 8 o'clock and unlock at 8 o'clock next morning. Between 4 and 8 p. m. the doors can be opened by means of the dial locks, in case of necessity, but at 8 o'clock the time lock dogs the bolts automatically, and though the dial locks may be picked. the bolts cannot be slid back until released by the unlocking of the time lock next morning. This gives perfect security against burglars, without interfering with the convenience of bank officers, and for this reason the manufacturers claim for it a decided superiority over all locks of similar construction. When once set it requires no further attention than winding, and as the movements are so arranged that it cannot run down when locked, there is no danmovements work independently of each other, either will operate the lock, even though the other should stop. With one winding the movements will run 48 hours, and during this time will lock and unlock twice, the unlocking being always in the day time. Further and fuller information may be had from the manufacturers, at the address above given.

United States Railroads in 1874.

Advance sheets of the introduction to "Poor's Manual of the Railroads of the United States for 1875-76" contain the following statements: The preceding tabular statements present a full abstract of the share capital, indebtedness, cost, earnings, expenses, dividends, etc., etc., of the railroads of the United States in operation during the year 1874. The total length of these roads whose operations are so reported Was, that year, 69.273 miles, against 66.287 miles in 1873, 57,325 for 1872 and 44,614 for 1871. The aggregate cost of these roads, at the close of their last fiscal years respectively, was \$4,221,-763,594, against \$3,784,543,034 for 1873, \$3,159,-423,057 for 1879, and \$2,664,627,645 for 1871. The increase of cost for the year over that for 1873 was \$438,220,560, while that of 1873 over 1872 was \$625,119,977. Of the total cost \$1,990,997,486 was made up of share capital, and \$2,230,766,108 of various forms of indebtedness, chiefly of bonds maturing at a distant day. The proportion of share capital to debt all the roads was \$60,425, against \$57,134 per

466,016. Of this amount \$379,466,985 were received for the transportation of freight, mails former to the latter being as 39.8 is to 100. The operating expenses for the year were \$330,ings equaled 12.8 per cent. on the total cost of dends was \$67,042,942, or 8.39 per cent. on the capital stock.

As compared with the preceding year the results were as follows:

EARNINGS

On passengers... Dividends paid...

The gross earnings to an inhabitant were \$12.82, against \$12.80 for 1873, \$11.63 for 1872, every 581 inhabitants, as against 582 for 1873, and 600 for 1872.

The gross earnings for the year were \$520,- population was one mile of line to every 671 in- As already remarked, the past year has been to the one in motion. In some cases where habitants, against 685 for 1873.

and merchandise, and \$140,999,081 for transportation of passengers, the proportion of the 12,441 for 1873. Their cost was \$1,318,399,092.

The result for the past year, on the whole,

to population in 1874 was one mile of road for for 1873. Their cost was \$1,972,177,814, against reforms.

the first, in the last fifteen years, in which the belt is heavy, or the shaft runs very swiftly, The mileage of the railroads in the middle carnings of our roads have not, for any year, it is best to slow down the speed, so that the

against \$1,126,702,107 for 1873, and was made cannot be considered an unfavorable one. The ing the beit on the pulley fave. The operator operations of a class of bold criminals, who have, in many instances, made those knowing ings. The net carnings were \$189,570,958, being 68 fper cent. of the gross earn-the combinations of the bank locks in common ing 36 fper cent. of the total. The gross earn-carnings were \$180,498, against \$90,186 for 1873. Their gross were \$62,224,961, or 10 per cent. greater than carnings were \$186,498,438, against \$104,053,302. up of \$657,934,601 share capital, and \$660,464,- carnings of the roads were only \$5,953,919, or for 1873. Of the gross earnings, \$144,798,567 the earnings of 1871. These facts show how were received for the transportation of freight, intimate are the relations which the railroad mails, etc., and \$41,699,871 for the transporta- system sustains to the business of the country, tion of passengers. The percentage of gross how potent its influence in the development of earnings upon the cost of roads was 14:14. Its resources, and the firm foundation on which The net earnings were \$70,188,972, and equaled it rests. Previous to 1874 the annual percent-5-32 per cent. of such cost. The earnings per head of population equaled \$16.95, against \$18 ceeded 10 per cent. those of the one imme for 1873. The dividends paid amounted to diately previous. A similar rate of increase for \$37,600,154, and equaled 5.7 per cent. on the the past year would have given an aggregate of share capital. The ratio of total mileage to population was one mile of line to 769, against 772 would, undoubtedly, have been reached but for the condition of our currency; that it was The mileage of the railroads of the Western not reached is one of the many proofs of the and \$9-81 for 1871. The ratio of total mileage States for 1874 was 35,639 miles, against 32,973 penalty we pay for delaying the necessary

\$1,730,728,234 for 1873, and was made up of During the five years ending with 1873, 28,428 \$839,030,222 of share capital and \$1,073,147,622 miles of new line were contructed. Among

shaft barely moves. Where this is impracticable great care should be observed in mountshould have a firm and solid foothold, and see to it that no part of his person or clothing gets between the belt and the pulicy.

Belts running from overhead shafts are freuently run off or on by means of a long stick, he operator standing on the floor. In throwing a belt off, the danger of accident is not great, but in running a belt on in this manner, the stick is liable to be caught and thrown with great violence, at the huzard of breaking human heads or valuable machines. The practice is

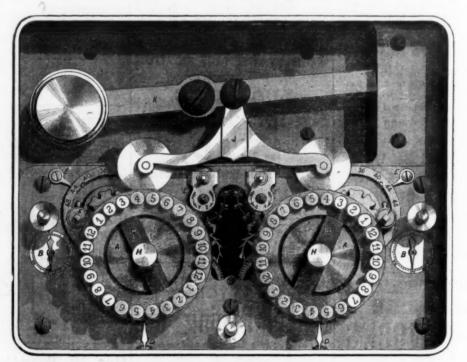
eprehensiole. A common practice is to stand on the floor, and cast the belt on the face of the revolving overhead purley. Once on, it must be held notionless in its piece with one hand, against the friction of the pulley face, while the other nan guides it on the loose pulley of the machine, or the tight pulley, if there be no lose pulley. The danger is obvious-the belt may atch in a projecting key, or the head of a set crew, or double under on the shaft, when it will wind up with a velocity corresponding to the speed of the shaft, and perhaps carry the workman with it.

It would seem to be within the bounds of inventive possibility to construct some chear and fictive implement for thre wing on belts.

The practice of leaving long ends of lacings or torn-up flaps of splicings to catch into clothing and any projecting object is not a good one. Small as is this malter, and slight as are these eather thongs and scraps, we have known of painful accidents being caused by them.

Using fast and loose pulleys without a belt guide leads to deplorable accidents. One lately occurred in this State. A man was adjusting a pair of powerful steam shears, and by some means, and all unexpectedly to him, the bett on the loose pulley worked over on the stationary pulley, and set the sh are in motion. His left arm at the time was between the blades, which, closing with great force, nearly severed the arm near the wrist, cutting through the flesh and bones, and leaving the band hanging by a few tendon- and the skin. The arm was ampu-tated near the elbow. The shipper or belt guide should have an automatic catch, that secures the belt on either pulley. Many concerns use this preventative, and it is so easily applied, in one form or another, and is so certain in its operation, that it should be generally adouted. Unless the shafts are perfectly in line-a conlition continually liable to change-and the faces of the pulleys are crowning, there is danger of the belt working from one pulley to the

There are other careless practices among mechanics and those having the charge of machinery which it is scarcely necessary to enumerate. The general thoughtless handling of machines, cleaning parts of machines while in motion, adjusting parts that should be at rest while being acted on, and other hands contracted by familiarity, should be avoided. A machine ought not to be triffed with. It has no remorse or pity. Once in its power, there is no escape with impunity. It should be managed with caution and constant care, for in dealing with machinery it is always tetter to be



THE YALE TIME LOCK.

financial revulsion of 1873. That such a revul-sion should occur was inevitable from the in-earnings were \$214,869,477, against \$211,717,781 of these was pushed with extraordinary energy excess of the provisions existing for their support. The pause in construction of these works (only 1940 miles having been opened in 1874, against an average of over 6000 miles for roads was 10 89. The net earnings were em Pacific, have either been built or the ger of being locked out through neglect to wind up. The lock has two separate and independent chronometer movements, fully jeweled for the construction of such an immense extent of such pendent chronometer movements, fully jeweled for the construction of such an immense extent of such pendent chronometer movements, fully jeweled for the construction of such an immense extent of such pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements, fully jeweled for the construction of such an immense extent pendent chronometer movements. and of the best construction, the operations of of line annually, was fully sufficient to create dividends paid amounted to \$16,605.832, and ation, consequently, will receive the benefit of which can be entirely relied upon. As the great embarrassment to all the interests, parti- equaled 1.92 per cent. on the share capital of whatever increase of traffic takes place. tonnage transported by the railroads during 1873. 1874 has exceeded that transported in the previous year, proving that the greater portion of our industries have suffered no material disturbance.

> The net earnings for the past year were \$189,570,958, against \$183,810,562 for 1873. The reduction in the cost of operating our \$35,978, against \$36,772 for 1873. roads has been due, in great measure, to the decline in the prices of material of all kinds, as well as of labor.

The mileage of railroads in the New England \$248,344,726, against \$263,697,778 in 1873, and was made up of \$137,125,915 of share capital per mile was \$42,862, against \$48,882 for 1873. This apparent decrease is caused by the omission of the Boston, Hartford & Eric Railroad, representing \$22,500,000. If that amount be included, the cost would be \$270,844,726, and the cost per mile \$48,397. Their gross earnings were \$50,064,774, against \$51,676,688 for 1873. Of the gross carnings, \$27,952,987 were received for the transportation of freight, mails, etc., and \$22,111,787 for the transportation of passengers. The percentage of gross earnings to

vestments made in railroad enterprises far in for 1873. Of these \$158,056,011 were received to prevent the lapsing of the lands granted,

cularly to those engaged in the manufacture of the roads. The ratio of total mileage to popufron. It is a gratifying fact, however, that the lation was one to 445, against one to 406 for

The mileage of the railroads of the Southern States for 1874 was 13,505, against 13,908 for 1873. Their cost was \$523,309,223, against \$509,324,106 in 1873, and was made up \$213,974,148 of share capital, and \$309,715,075 of debt. Their average cost per tile wes earnings were \$52,259,241, against \$53,696,409 for 1873. Of the earnings \$34,782,286 were received for the transportation of freight, mails, etc., and \$14,131,291 for that of passengers. group of States for 1874 was 5617, against 5308 The percentage of the gross earnings to the for 1873 and 4574 for 1872. Their cost was cost of the roads was 9.9; the net earnings were \$17,269,332, and equaled 3 8 per cent. on such cost. The earnings per head of populaand \$1:1,218,811 of debt. Their average cost tion equaled \$4.55, against \$4.76 for 1873. The dividends paid amounted to \$1,068,455, and equalled only 0.50 per cent. on the share capital of the roads. The ratio of total mileage to population was 735.

The mileage of the railroads of the Pacific States for 1874 was 1639, against 1612 for 1873. Their cost was \$159,332,709, against \$154,090,809 mile in 1873, \$55,116 for 1872, and \$59,726 for 971, and equaled 6.21 per cent. on the total roads was 10.5; the net earnings were \$9,852,776, way to put on a belt. The belt should be first share capital. The ratio of total mileage to and equaled 61 per cent, on the share capital. placed on the pulley at rest, and then run on 437.

The decrease was in consequence of the of debt. Their average cost per mile was these were from 10,000 to 12,000 miles of what

The parties largely chargeable with the excess of line not called for by any business want are the railroad companies themselves. A spirit of rivalry, or advantage to parties connected with these works, has led to the construction of a large extent of unproductive mileage. The grea offenders in this direction are the Chicago and Northwestern, the Milwaukee and St. Paul, the Toledo, Wabash and Western, the Michigan gan Southers, and the Erie. The Toledo, Wabash and Western and the Erie have in consequence, been forced into liquid ation. The Chicago and Northwestern, and the Milwankee and St. Paul have probably sacrificed the value of their share capitals upon wild and visionary schemes.

Carelessness in the Use of Machinery.

An exchange offers the following good sug-

If one who looks daily over the newspapers should compile the statistics of loss of life, or injury to body or limb by machinery, for one year, the aggregate would undoubtedly sur prise the community. At least such is the in 1873, and was made up of \$83,112,600 of presumption, from the frequency of such share capital, and \$76,220,109 debt. There records. We do not refer particularly to unaverage cost per mile was \$89,981, against avoidable accidents caused by defects in ma-\$95,500 for 1873. The gro-s earnings were chinery, or sudden or unlooked for contingenthe cost of roads was 20.16 per cent. The net \$16,774,086, against \$15,276,747 for 1879. Of cies, but to those that might be avoided by a earnings were \$16,713,183, and equaled 6.75 per the gross earnings \$10,478,961 were received moderate degree of carefulness. A large procan be proportion of share capital to debt cant. The earnings per head of population equaled \$13.75, against \$14.30 for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of share capital to debt cant. The earnings per head of for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of share capital to debt cant. The earnings were \$10,713,183, and equaled \$13.75, against \$14.30 for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers. The perparticularly throwing them on or off policys in little proportion of these are caused by handling belts, for the transportation of passengers.

hly careful than foolishly cardess Hot Blast in the Bessemer Process.

In the course of the summer of 1874 some 50 or 60 charges were run in the Bessemer plant a Zeltweg, Germany, with a blast heated to 700 C. (about 1300° Fahr.) The cast iron employed was the so-called halbirt, or white radiated, and contained 0.8 per cent. silicon, 2.23 per cent. carbon and 22 per cent. manganese. After smelting the iron contained 0.7 per cent sille m, 2.3 per cent. carbon, 1.3 per cent. manganese, The charges were very hot, and the supposition. to which theory gave rise, that a slightly carbonaceous iron could be used for the Bes-emer process with hot blast proved correct. It was also possible to throw in more rail ends that otheraise. Iron, which with cold blast would bear only 12 per cent, of rail ends, took up 18 per cent. with hot blast. There were practical difficulties, however, which rendered it impossible to conduct it continuously An important evil was that the bottom of the retorts were uncommonly attacked; while u-ually one would serve for 15 or 16 charges, here it was often u-cless after two charges.

A second disadvantage was that all the parts which were in contact with the hotair, and couequently became very hot, could only be handled with great d fliculty. It would require long experience on the part of the workmen to render this disadvantage less perceptible.

These were the causes that put a stop to the immediate use of the hot blast, notwithstanding the favorable results obtained. It is now practically proved that the Bessemer process can be conducted with hot blast, only that the manipulations require experience and practice. Berg und huettenmannisches Jahrbuch, 1874, p

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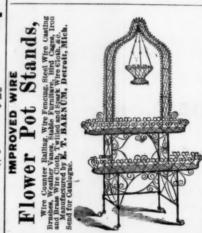
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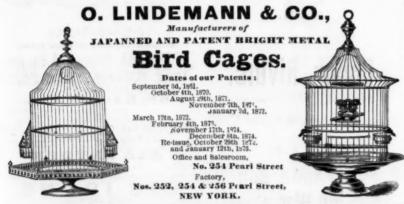
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Iron Making in the South-Ores.

CARTERSVILLE, GEO., June 30, 1875. To the Editor of The Iron Age: in reviewing the cost of charcoal in my last letter I did not could not be made at less than 6 cents per bushel. I am well aware that there are favored localities where wood is plenty, convenient to the furnace and the roads up on which at is to be hauled hard and firm, that will allow a margin of cost even at 5 cents per bushel. There are other localities where the wood can be delivered by railroad or water to the furnace site, at from \$1.50 to \$2 per cord, at which the charcoal can be made in kilns below 5 cents per bushel. The South affords a number of such localities, but most of the former are too distant from railroad transportation; the latter are necessarily on some navigable stream.

I should also have stated that when the run of the mine is counted coal is mined in a 4 to 5 foot vein at 21/2 cents per bushel. The Knox ville Coal & Iron Company have lately con racted to deliver 100 tons per day (2500 bushels) to the cars of the E. T., Va. & Geo. R. R. at heir shute for 51/4 cents per bushel; this cost includes a royalty of one cent per bushel.

The principal supply of iron ores in the South must be from the fossiliferous red hematite and the brown hematites or limonites. Compact red hematites and magnetites are found in a limited area in Tennessee. Virginia affords large quantities of magnetites and specular ores, while the immense deposits in the wild mountains of North Carolina are known only to a few hardy explorers, whose story is looked on as a species of fiction. Georgia, too, has some large deposits, as well as veius of magnetic and some superb specular ores, and specimens indicative of larger bodies have been found in

The fossiliferous ore exists in Tennessee in two principal veins, one running immediately at the foot of the Walden's Ridge, the other, in the White Oak Mountain, being about an aver age of ten miles east of the former, parallel to each other northeast to the southwest. Be tween these are several smaller veins at points widening out to some size, as at Haif Moon Island; and on the castern side of the valley are large deposits at irregular intervals. The White Oak Mountain veins are continued under the name of Taylor's Ridge, in Georgia, and is the ore used at Cornwall and Round Mountain in Alabama. This ore has never been worked except near the outcrop, and varies in richnes rom 50 to 62 per cent. of metallic iron. At ome points it contains a very small quantity of phosphorus, at others near 60 100. Deep under the ground it will most likely be less rich in iron and contain more lime. This is the same ore found in Lycoming county, Pa., and Clinton, New York; and Prof. H. D. Rogers estimates that in every 35 yards of width and one mile of length there is 61,600 tons of ore, if only 18 inches thick. It may safely be said to extend over 300 miles in Tennessee, Georgia and Alabama, and to average in depth or width much more than twice 35 yards. A rather poor sample gives, as analyzed for me by W. M.

ı	Habirshaw, M. E., of New York city :
	Ferric oxide
	Alumina
	Lime
	Water 973

We may safely estimate that in this lead of ore alone Tennessee and Alabama have at least 36,960,000 tons, averaging 50 per cent, of iron. And this lead crosses two railroads, runs for 200 miles in from two to six miles of three different navigable rivers, has on its northwest side a valley of unsurpassed richness, and the ridge in which it is held is in many places covered with a primal growth of oaks, bickories, walnuts and yellow pines.

The Walden's Ridge vein of fossil ore is

known to run from Cumberland Gap, with but slight interruption, to within 20 miles of Tuscaloosa, Alabama, full 375 miles. It is known to dip under the Cumberland Mountain and to Nails and Knobs being a specialty be upheaved and show in the Elk Fork Valley, at the Crab Orchard Mountain, and for miles in Sequatchee Valley. In the Tennessee Val ley it dips northwest at a very steep angle; in Elk Fork and Sequatchee valleys it dips southeast, hence it is a fair supposition that it is continuous entirely under the mountain, an average distance in a straight line of ten miles. This vein has been opened at Rockwood to a depth of 110 feet, still pitching at an angle of near or full 85°, and a boring inside between the outcrop and the mountain 300 feet deep did not go through the proper overlying strata. This ore has yielded at Rockwood 60 per cent. and over of pig in the furnace. Two analyses of the Walden's Ridge ore give:

Peroxide of iron..... Phosphoric acid. Leaving out the portion of this ore above

Emory Gap, and taking only that along the line of the Cincinnati Southern Road from Emory Gap to within 13 miles of Chattanooga, and as only 3 feet of thickness to the vein, we have for this 63 miles of distance and 10 miles of width 619,200,000 tons of ore; and it is all workable, for while it goes down at a steep angle on the so-theast, it has a very gradual slope in the Sequatchee Valley, and it outcrops in that valley for 35 miles. And this calculation is not for one-third of what exists in Teuncssee in this vein alone, for above Emory Gap at it is regular, persistent and of excellent quality. Within two to four hundred yards on one side is the coal to work it, on both sides the limestone, and in a half mile or less on the east the C. S. R. R., and a little farther on the

clared that the world did not elsewhere contain such a combination.

Below Chattanooga this vein divides or rather shows on both sides of Lookout Mountain, and again on the east side of Raccoon Mountain. wish to be understood as saying that charcoal Farther down in Alabama it takes its old and regular place along the eastern border of the Warrior coal field, dipping under it, and I am informed, showing in the Blount Springs Valley, ranging from 5 to 7 feet thick. It is useless to calculate the quantity of this ore here shown; it runs up into thousands of millions of tons. The quality of the true Walden's Ridge vein varies but little, but in the peculiar off-hoot and immense escarpment of ore just southeast of Birmingham there is a great deal of silicious matter. I have several analyses from various points, giving of chief components:

Metallic										50.40	55 31
Silica									3.31	26.00	5 37
Phospho	rus								.61	. 5	.06
Lime		 	0 17	,	 		a	۰	.94	4444	+111

Alumina 331 142 537
Phosphorus 66 5 06
Lime. 94
The first analyses was made by Prof. Smith, chemist of the Alabama State Geological Survey, the rest by various parties. It seems a little incredible that a fossiliferous ore should contain only 06 of phosphorus. I have no loubt that all these samples are from the surface. The great mas of the ore to be used at Rising Fawn is very rich in limistone, and shows only about 30 per cent, of metallic from. It is not easy to compute the quantity of the brown hematites in the great valley; they extend in recurrent beds of greater or less size in parallel lines to the Cumberland Mountain range entirely into the cretaceous formation of Alabama. The line of the geological formations runs, in East Tendessee, northeast to southwest, until near Georgia; then it suddenly changes to near borth and south, the eastern boundary near the metamorph crocks, running less acute to the northwest; the line then turns area east and west for 40 miles, then returns to its regular position of northeast to southwest. In this bay-like formation, and from it to Brierfield, in Alabama, are hundreds of beds of brown hematite of surpassing richness and some of wonderful purity. While at other points in the great valley are many good beds yet skirting along this semi-metamorphic beit, from far into Virginia down, are the great devosits, and from the northeast end of Bartow county, Ga., to Shelby, Ala., it seems as if nature had with one wild struggle apheaved and leposited all the wealth stripped from the glacier-ridden hills and valleys northward. A valley stretching ea-tward on this line from Cartersville has been fitly named the Iron Valley. The State geologist, Prof. George Little, reports as near it 10 to 12 large beds of brown hematite, and a number appearing to be of smaller size. Turn westward from Cartersville, on the Rockmart Road, and every few miles we find a greater or less deport until, striking the Selma, Rome and Dalton Road, we come to those wonderful and vast deposits. In a former l

Hill; it is one of these deposits coming up in a vast come between lowest silurian limestones on one side and the metamorphic states and sandstones on the other. Mr. J. H. Smith, an ore dealer and miner of Pitt-burg!, standing on its summit, told me that it was utterly impossible to compute its quantity; he thought 100 ions a day might easily be gotten from it for far more than 100 years. It is a solid mass of limonite, a flattened cone over 200 feet high, covered on three sides with a thin study of earth, and its have covers over 40 acres of ground. In a mile of it are two other deposits on lower hills, but apparently as inexhaustible. This great deposit has attracted much attention, and a partial analysis of it having been made, which did not show the true quality of the whole hil, but only of a little band of ore on the west side, Prof. George Little had a number of samples gathered, and they were analyzed by Prof. H. C. White, of the University of Georgia, whose specialty is the detection and estimation of phosphorus. A mix dnowber of samples gave: samples gave :

| From all the hill. | From three sides. | | S5272 | 50.557 | | S55 | S5 Phosphorus. Water.....

Other analyses of brown hematites from this 58 89 58 01 3 09 3 06 0 27 35 20 55 11 19 10 59 Metallic Iron.....

Of the oie No. 4, the chemist informed me that he tried sample after sample and could parely find a trace of phosphorus. It is a light

Colored liver ore, with yellow streak.

On the line of the Alabama and Chattanooga On the line of the Alabama and Chattanooga Raiiroad, at intervals, but chiefly below Birmingham, are deposits of brown hematite, some of apparent great size, especially at Woodstock Station, and abother at Tomahill, owned by the Thomas Bros., of Cata-auqua. But ittle work has been done at any of these for development, and no fron made from the ores; out Mr. Gites Edwards, formerly of Pennsylvania, thinks their quality and quantity good. Analyses their quality and quantity good. Analyses show 52 to 58 per cent. of meta-lic iron, and phosphorus ranging trom a trace to 38 100ths. I must confess that it is hard for me to believe any true brown hematite in this Southern region to be free from puosphorus, and unless I know that a bed has been dug into at various points, of equal weights, the samples thus gotten poundes together, and this powder analyzed, I have doubts of the result.

The magnetic ores of North Carolina are interesting as a present executive executive executive.

great measure at present maccessible, exceptine vein ores in Catawba, Lincoln and Gaston; these have been slightly worked and are of good quality. Along the Air Line Raifroid, from Charlotte to Atlanta, in Georgia, are many vein outeroppings of magnetic ores, rick in tron, but most of them titaniterous. At other points in the galessoid formation of Georgia, outeroppings of good ore are found. One singular vein of near 60 feet width is in Cherokee county; the northwest side is magnetic and compact, columnar in structure, the southeast is a cellular brown hematic. 1, shows many miles in the midst of a heavily timbered region, and near an outerop of marbie, but is gion, and near an outerop of marbie, now 15 miles from a railroad. In Aiabain

Metallic iron 60'40 sometimes richer .. mere trace

Tennessee River to carry it to market. Prominent English iron men, not one but many, may well have exclaimed in wonder, and de-

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New Patents.

We take from the records of the Patent Office n Washington the following specifications of certain patents lately issued, which will be found interesting:

IMPROVEMENT IN COKE OVENS Specification forming part of Letters Patent No. 163,338, dated May 18, 1875, issued to Lewis Schantl, of St. Louis, Missouri

Figure 1 is a vertical longitudinal section Fig. 2, a vertical cross section.

Like letters indicate like parts To provide a strong, durable structure, in which coke of a superior quality can be econ-

mically made, and from which it can be readily discharged, are mainly the objects of this invention. It relates chiefly to the bottom of the oven, its operation, and the manner of discharging the even.

Referring to the accompanying drawing, A epresents the form of coke oven used. It is of the bee hive type, and is mounted on parallel foundation walls B and B', which inlose a room or pit, C, below the oven proper. D D' represent fron girders extending across over the pit and resting, at either end, in the walls B B'. Resting upon the girders, and also in the walls, are a series of plates, d d' d', &c., constituting the immediate support for the bottom of the oven. In form it is similar to the opening at the bottom of the oven, and, in diameter, slightly larger. It is preferably con-structed of four similar perforated cast iron plates, suitably fastened together, and, at their outer edge, provided with an upturned flange or rim, e, partly to inclose a fire brick hearth, e which is laid on the plates, and partly, when the oven bottom is closed, as in Fig. 2, to aid in forming a tight joint by coming against the plates d d', &c. This bottom is movable for

bottom.

Claim.-1. The combination, with a coke ing movement.

2. The combination of the oven A, walls B B', guides G G', pins I I', and bottom E.

flange e, and pins I I.

flange e, pins II, guides GG.

guides G G', and lowering apparatus J. The inventor sends us the following statement of the material and labor required to build one oven (size 9x7 feet), with an average capacity of 90 bushels coke in 48 hours :

2800 fire bricks.

1% barrels fire clay. 22 perches common rubble masonry. 3800 lbs. of rough castings 75 lbs. of wrought iron.

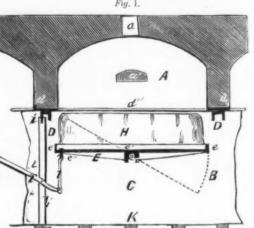
3 days' wages for one fire brick layer. 15 days' wages for one common laborer.

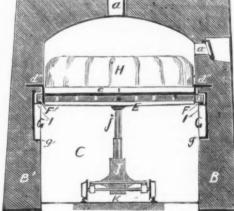
The Wear of Rails.

the purpose of discharging the oven below into rails, presented at the recent meeting of the flanged rails before the last pass in the rolls,

in the production of a coke which is dense, makes the carbon graphitic, removes strains hard, uniformly good throughout, free from and softens the steel. Now, the plate is finished sponginess and from black footings, and being hotter, if anything, than the flanges of the rail; of a bright silvery appearance. An especial it is all finished at the same heat; it has less benefit, however, arises from the mode of oper- than half as much carbon as rail steel has; it ating the bottom, as described. The oven can is not subject to impact in use; and yet must be charged much more fully than in any other be softened. But the rail flange, which is much oven previously constructed with a movable more likely to break, both from its temper and its treatment, should be male of such a form we are told that it must inevitably be hardened oven, of a bottom having a vertical and oscillat- in finishing, and go into use with all its imper fections not on its head but in its foot. Perhaps there is some special Providence which excludes rails from the general laws which 3. The combination of the oven A, walls B govern the behavior of steel in other forms. If B', girders D D', plates d' d', &c., bottom E so, it is important to know it on some more scientific ground than the fact that a great 4. In combination with the oven A, walls B many thin flanged steel rails have not as yet B' girders D D', plates d d, &c., bottom E, broken. Now, I do not attempt to state posiflange e, the guides G G, and lowering appa- tively that the temperature at which the flange finishes has anything to do with the strength of 5. The combination of the oven A, walls B the rail. Perhaps it is true, as stated squarely B', girders D D', plates d d', &c., bottom E, by the committee, that a rail generally breaks, not from weakness of the base, but from injury 6. The bottom E, trunnions F F', walls B B', to the head. My chief object at this time is to ask railway engineers whether or not this subject is worthy of further consideration and experimenting; and if so, what tests will be satis-

The subject is a difficult one. Two rails with different thickness of flange and otherwise alike, cannot be fairly compared, because their weight and the position of the neutral axis are not the same. Two other methods occur to me. One to anneal a number of thin flanged rails, and to subject these and a similar number of unannealed rails to physical tests. This might not be deemel satisfactory, as the whole of the unannealed rall would be toughened, and its resistance to wear would be decreased. The In the discussion of a report on the wear of other method is to stop a number of thin





IMPROVED COKE OVENS

constitutes a principal feature of the invention. It is twofold, directly downward into the position shown in the full lines in Fig. 1, after which it is tilted as indicated by the dotted line in the same figure. To this end the bottom is mounted on trunnions F F', which, at either side, are arranged in guides G G', which, respectively, are contained in the walls B B'. The guides extend requirements, and on this subject, in default of downward enough to enable the bottom to be dropped sufficiently for the top of the charge H to clear the bottom of the oven wall, and at the purpose of showing railway managers that their lower ends, are suitably shaped for the there is enough in these metallurgical considertrunnions to turn. When the bottom is in

place it presses closely against the plates d, d, d', etc., and is supported by removable pins I 1'. J represents a portable apparatus used in lowering the bottom. For this purpose employ a jack-screw, or a hydraulic jack, and attached to a truck which is run in on a trackway, K. that extends along the bottom of the pit. represents a device, also portable, used in tilting the oven bottom. It consists of a post, I, which, when in use, can rest on one of the trackway ties and be steadied in position by a pin, l, passing through its upper end into the guide D', and of a lever, l'', pivoted to the post l, and at its end provided with a hook, l'', and at its end provided with a hook, l'', hose and allowed them to break. After a vertical constant of the post l, and l are the provided with a hook, l'', hose and allowed them to break. After a vertical constant of the post l and l are the provided with a hook, l'', hose and allowed them to break. which engages with a stirrup bolt, e', in the under side of the bottom E.

To operate the oven, it is charged in the usual way through the opening a above, and the charge is leveled through the hole a'. When the coking is completed the jack J is brought into requisition by running it along the track and bringing its ram j up against the bottom E. The pins I I' are then withdrawn, and the bottom, by means of the jack, lowered into the bearings g g' of the guides G G'. The jack is then removed, and, if desired, a car run in after it to receive the charge. By means of the device L the bottom is tilted, discharging the coke below. By reversing the described movement the oven is again closed up, and before its walls have chilied. While the discharging of the oven takes place the opening a is preferably closed.

Several important advantages accrue from this invention. The entire construction is very simple, strong and compact. The principal in Fig. 1, is inclosed and protected by its own walls, preventing any interference of wind, rain or snow, and any undue chilling of the oven when opened. The act of discharging being but momentary, the coking operation virtually becomes continuous, largely increasing the capacity of the oven, and in being able to anything about steel, we know that rolling or discharge the oven at once, both the tedious hammering a dark cherry red heat, tends to the durability of the structure, and resulting tained as much carbon as 0.15. Annealing City.

the pit C. This movement is peculiar, and | American Society of Civil Engineers, Mr. A. L. , and to stop another lot before the last two Holley gave the following interesting facts as passes, and, perhaps, pursue the course further. the result of his extensive observation and ex- These rails thus stopped off are to be reheated perience :

> Rails with very thin flanges are advocated by the committee. Flanges 3-16 at the edge are used, and one-eight inch is said to be sufficient to meet all engineering requirements. Now, requirements, and on this subject, in default of more facts, I shall confine myself to a theoretical statement, supported by analogy, simply for ations to warrant further attention and re-

It will be admitted that the head of a rail, both as a support and bearing for wheels, and as the top chord of a girder, to resist compression, should be hard, while the base, to resist tensional strain, should be tough-and to be tough, it must be comparatively soft. As both hardness and softness are required, a homogeneous rail must possess a compromise between these two qualities. Many of the early steel rails wore much longer than those of modern temper, but the very hardness which inness, and allowed them to break amount of observation and experimenting, we have at last settled on 0.35 to 0.40 carbon, with the usual average of other hardening elements, as a compromise, and the complaint-true if not just-now is, that rails do not wear as well as the old brittle ones did.

Now, rails are always expected to be tough and fibrous in the flange, and may be weak and brittle in the head, if they are only hard. Nicking the flanges of steel rails is generally abandoned, and rails having any perceptible im perfection on the flange are thrown out, and thus it appears that the chief feature in the manufacture and treatment of rails is increasing and insuring the strength of the flange, even when it is done at the expense of reducing the wearing qualities of the head.

Now, what shall we say of an exactly opposite course? What shall we say of a specification for rails which increases the brittleness of the flange without beloing the wearing portion thereof, especially when a set of these qualities of the head? My theoretical charge ovens are arranged continuously, as indicated against the advocates of excessively thin flanges is that they do this very thing.

head is of a reddish yellow. Now, if we know pacity for 4000 bales of cotton.

to as nearly as possible the color the head had when it was last in the rolls, and then to receive the last pass or passes. The flanges and heads would thus be finished at substantially the same temperature. A large number of tests of these and ordinary rails from the same casts of steel would, perhaps, not give the exact difference in strength, but if there was an ob vious and marked difference in their tough ness, the general question of extremely thin flanges would be settled.

If there is anything in the theory, I will call it, that strength is decreased by the comparatively cold rolling of thin flanges, then the designers of flanges have in their hands one ele-ment of wearing, as well as of the other qualities of rails; for the amount of carbon the foot may have determines that which the head must not exceed. If the carbon in the foot is in such combination as to give more than the minimum degree of brittleness then very little carbon can be put iv, but if it is in a condition to interfere in the least possible degree with toughness then more may be put in, and so increase the wearing qualities of the head.

It is most desirable to have the profession matter will be satisfactory before such tests are made. It would be unwise to go to the expense of a properly large number of such experiments and then to have the engineers say they were not conclusive. I have no doubt that ways and means can be soon provided to settle this most important and most unsettled question, if the profession will decide what tests will be satisfactory.

Glycerine not a Preventative of Boiler Incrustations .- In 1873, says the Deutsche Industrie Zeitung, Asselin, of Paris, recommended the addition of glycerine to the feed water for steam boilers. Ch. Brenner has recently communicated to the Societe Industrielle de Rouen that he had tried adding glycerine to strongly calcareous water, exactly in the proportions given, but the only result was a hard, white incrustation like Fayence ware, which adhered unusually tight to the boiler.

Messrs. Harlan & Hollingsworth, of Wilmington, Delaware, have nearly completed two fine iron steamships for Charles Morgan, of New When a steel rail with such flanges is rolled, York. When finished they are to be engaged however fast, even at the rate of fifteen passes in the Liverpool cotton trade, plying between in a minute and a half, the flange will come out the latter port and Brashear, Louisiana. They of the last pass at a dark cherry red, while the are 275 feet long, and will have a storage ca-

The Mormon capital, Salt Lake, Utab, is operation and the expensive labor incident to combine the graphitic carbon, and to that ex- about to build water works, and have entered the process of raking out the contents of the tent to make the steel hard and brittle. This into contract with Dennis Loug & Co., of Louisoven, as well as the costly apparatus employed is so true and so well understood that no steel ville, Ky., for the necessary cast iron mains and in ramming out the contents, are alike dis- plate maker would put unannealed boiler plates branches. The contract calls for 1300 tons of pensed with. The heat is stored up in the walls, insuring an even temperature, increasing allowed to use unannealed plates if they connegotiated by Mr. Long whilst in Salt Lake eron.

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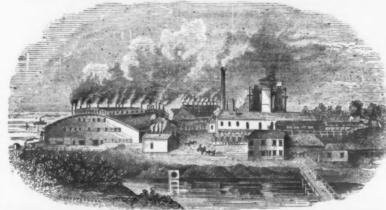
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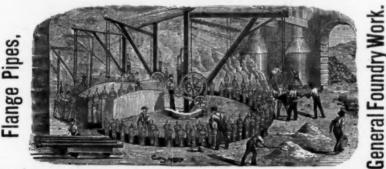
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G. BARRY WALL, M. E.

II.

OF THE PREPARATION OF THE BILLETS. There exist two separate and distinct methods of making wire. One, in which the rolled wire rods are drawn through successively diminishing holes in die plates, and the other in which the metal is simply rolled, by means of the machinery employed in the so-called "continuous process." The "continuous mill" was invented by Mr. Bedson, of England, a few years since. As originally constructed, the plant consisted of a furnace, provided with doors at each end, and 16 pairs of rolls. The first 14 of these were arranged in a continuous line immediately behind the furnace. There is but one groove in each pair, and this groove diminishes in area as the pairs of rolls recede from the furnace. Between each pair is placed a tube, so arranged that a rod passing between the grooves would be received by the tube, and transmitted to the next pair of rolls, and so on. The two remaining pairs were placed at one side, and at some distance from the others. The method of operating this is as follows: Having placed a illet, about 30 feet in length, in the furnace, the doors are closed until the metal has been heated to the proper degree. The back door is then opened, and the end of the billet passed between the first pair of rolls; thence through the tube, it passes between the second pair, which is caused to revolve with a velocity as much greater than that of the first pair, as is sufficient to take up the additional length, con-sequent upon the diminished area of the billet. From the second, through a similar tube, the rod passes to the third pair, and so on. After having passed between 14 pairs of rolls, the end of the rod is seized by a boy and carried around a to the remaining two pairs, between which the rod passes as before, and then appears as finished wire. The object of removing the two last pairs of rolls from the others is to separate from the rod all scale which may have formed upon it during the process of rolling. This is accomplished by the rapid bending and violent vibration to which the rod is subjected. As far as handling and manual labor are concerned, this process is cheaper than the older method. but the actual cost of the machinery is far greater. It would be impossible to obtain the 16 pairs of rolls, used in the above described mill, for less than \$40,000. Again, the product s less reliable, because a poor grade of iron can be rolled with comparatively little care, while it

drawing whatever. The first step in the preparation of the billets is the melting, or more properly, the heating of the "scrap." Upon the quality of wire desired depends the kind of scrap employed. A poor grade of iron cannot be drawn into fine wire. "Boiler plate scrap"-ordinarily a very good grade of iron-can be drawn down to about 14 or 15, American guage, and will be fit only for fence or vineyard wire. "Horse shoe" and "bar iron scrap" may be drawn to about 20. Fine grades of wire can be made only from the best "charcoal" and "Norway The process of melting is carried on in closed forges of the Catalan type, supplied duction, making the proper allowance for exwith a rapid draught. The fuel employed is pausion. The area of the third is found by dicharcoal. Alternate layers of charcoal and scrap are thrown into the furnace, and the whole is heated until the mass of iron assumes a comparatively solid and compact character. This operation lasting from 15 to 30 minutes, ecording to the character of the material used. This mass or "bloom" is then removed from the furnace, and carried to a large steam hammer where the metal is hammered until it assumes a compact form. From the hammer the blocks of iron are removed while hot to reheating

requires a pretty good grade to allow of any

furnaces of the reverberatory type. From the reheating furnace the blocks are taken to a second hammer and again firmly compacted. Then follows the operation of rolling the billets, which is effected by passing the heated blocks of metal through a train of ordinary heavy rolls. The product is sheared into convenient lengths while hot : and in this manner are formed the "billets," which, after being heated to the proper degree,

are ready for rolling into wire rods. OF THE WIRE-ROD ROLLS.

An ordinary train of rolls of small dimensions is employed in the rolling of the wire rods. The actual dimensions of the rolling machinery cannot well be determined from theoretical considerations. We are, therefore, compelled to accept the results of practice as the most reliable and efficient.

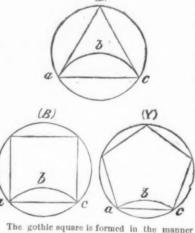
In Great Britain wire rod rolls are used of 12 inches diameter of rollers, and are designated 12 inch rolls. In America 8 inch rolls are used with as good results as those obtained in England from the use of the larger rolls. Having selected for our consideration an 8 inch train, the first problem arising is the determination of the number of grooves necessary for reducing the area of the billet to that of the wire rod. A simple and very satisfactory method of determining this is as follows: Having given the area of the billet and of the wire rod, and a mean ratio of reduction of area assumed, a descending geometrical series may be formed in which the area of the billet may be taken at the first term, the area of the rod as the last term, and the ratio of reduction as the constant ratio to find the number of terms.

To the area of the billet, must be added 1-48 of its area for the proper area of the first groove; this quantity being the amount allowed for expansion, when heated. For the areas of each of the succeeding grooves, a quantity slightly less than that allowed for the preceding must be added, in consequence of the cooling of the metal. To determine the number of grooves we have the following simple formula :

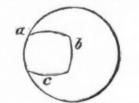
 $n-1 = \frac{\log A - \log a}{1}$ log. R

and R the ratio of reduction. The determinanother important problem.

With reference to the shape, it is found that by alternately flattening and squaring or round- rolled boiler plate. The beginning of the break ing the section of the billet, the best possible was retarded about 10 per cent., while the are arrived at. The grooves are of three kinds, ovals, gothic squares, open and dead squares, beside the plain circular grooves for finishing. Ovals are of three kinds, and are called ovals of the first, second and third classes. Firstclass ovals are constructed as follows: About hastened by corners which are already torn. a regular triangle, whose side is the greatest diameter of the oval, describe a circle, and with the radius of the same circle describe the nevertheless, worth repeating: arc a, b, e, (a). Ovals of the second-class are ribed upon the side of a square, and those of the third-class upon the side of a regular pentagon. Vide accompanying cut.



shown in the accompanying sketch, the sides



of the square are arcs of circles, the radius of proper area of the groove having been deterby a series of trials, made to conform to the computed area, by means alternately passed through ovals and Gothic or open squares, in order that the finished rod shall possess, as far as possible, a certain degree of uniformity and homogeneity. In finishing, the rods are passed through very flat ovals, and then through the finishing grooves proper. To find the area of the second groove, divide the area of the first groove by the ratio of reviding the area of the second by the ratio, and so on for any one of the successive grooves. The wire rod rolls consist of accurately turned cylindrical rollers, in which are cut, with great care and precision, the grooves, the arrangement of which is described in the sequel.

There are generally three sets of rollers, the roughing rolls, rolls upon which are cut the finishing ovals," and the "finishing rolls," the grooves of which are dead squares and circles, for rolling finished rods. The housings are arranged as in ordinary roll trains. Guides, consisting of iron plates with apertures oppo site the different grooves, are provided; they are held firmly in position by means of long steel set screws. The bearings for the rolls are worn away very rapidly, on account of the great pressure and velocity of revolution. Brass bearings last only about one week; phosphor bronze lasts as long as three weeks, and is that it would be able to resist for a long therefore preferable.

STEVENS INSTITUTE OF TECHNOLOGY, HOboken, N. J.

Strength of Boiler Iron.

R. Weinlig, director of the Magdeburg Steam Boiler Society, has recently made a complete series of experiments on the strength of boiler iron, and has arrived at some very interesting results. In these experiments he determined how strongly the iron of 7 to 12 millimeters thick (about one-quarter to one-half inch) could be bent, both in the direction of the between the furnace and the engine to be run onger fiber and across the fiber, before the break began and before it broke completely; also, the action of iron bent hot. The normal requirements were those demanded by the English and Holland admiralty.

Boiler plate from different sources, but marked as the same quality, were found to differ greatly in goodness. Most of the samples, indeed, satisfied the normal requirements when bent hot, but many fell far short of it when bent cold. We find that the following did not fulfill the requirements of the English admi-

" 5 " 15 " 5

In general, with exception of the best qualities, the plate proved harder than desirable. Commercial articles were, as a rule, unfit for boilers. Unfortunately, we must add that the first as a sample. The smoothness of the edge caused by the cutting, have a considerable influ- to the builders.

Wire-Rod Rolling and Wire-Drawing. in which n represents the number of grooves, ence on the beginning of the break. Strips of A the area of the billet, a the area of the rod, iron cut from the same plate showed a difference of 20 to 50 per cent. in the breaking tion of the shape and area of the grooves forms angle after the cut edge was filed off about 5 mm. (one-fifth inch).

A similar effect is produced by heating hard breaking angle for total fracture was not essentially different. The observation is very important that by bending backward, or very rapidly bending, the corners tear in sooner to a certain degree, and that total fracture is also

From the experiments we draw the follow ing lessons, which, although not new, are,

1. It is recommended to purchase boiler plate only from the most reliable sources, and to increase the price of boilers by the use of good iron rather than to reduce the quality of the iron by reducing the price.

2. The previous testing of the plates, both cold and warm, is very necessary. If a plate is not faultless in all points and up to the usual demand, it is useless for boiler plates.

3. In selecting fire plates, the thicker and harder the iron the larger the plates should be A soft charcoal iron is best adapted to this use; also fine grained iron.

4. The plates should be bent, as far as prac ticable, only when warm, fire plates without exception, and then examined to see if they are

5. With fire plates, file or rasp off the edges, so as to remove the effect of the cutting. This is perceptible about 5 m. m.

6. Iron for fire plates must show the breaking angle along the grain and across it as nearly qual as possible.

7. The less strength it has along the fiber. the more necessary it is, in making boiler mantles, to have double rivets.

8. The fixing the corners should be done only when hot, and above all very carefully.

Utilizing the Waste Heat of Flame Furnaces.

In the annual report of the Association des Ingenieurs sortis de l'ecole de Liege, the Belleville boller is recommended as excellent. The most important thing to be taken into consideration is to make the furnace and boiler independent of each other. The regulating dampers, the flues (Fuechse), and the chimney which is the breadth of the groove. The should be so constructed that the boiler can be instantly disconnected from the furnace. The mined by calculation, it is laid out by any of chimney must have a hight of 15 to 20 meters, the methods above described or indicated, and a diameter equal to the flue. The hot channels, which lead the flames to the boiler. have the same cross section as the chimney, of the ingeniously contrived planimeter. In and the number of elements of the boiler the operation of rolling the rods, the billet is should be such that the sum of the transverse sections between the tubes of a horizontal series is equal to the cross section of the flue or chimney. Experience enables us to assume that for 4000 to 5000 kilos (4 to 5 tons) of coal consumed in 24 hours, with a furnace running continuously, a boiler of 50 nominal horse-power is sufficient to reduce the temperature of the gases, which have passed it, to a point below the melting point of lead. The effective action will equal one-half or one-fourth of the nominal power of the boiler. The feed pump must be of such dimensions that the beiler fed continuously; the cross section of the pump piston must be 3 or 4 times larger than that of the plunger piston. The tubes should be cleaned, and this is easily done, every 3 to 6 weeks, according to the quality of the water

In the heat pipes, as well as at the lower end of the chimney, openings are left for removing the asbes that are carried along. The exterior of the boiler must be frequently cleaned, s that the draft of the furnace be not injured by the soot collected on the tubes.

It is not absolutely necessary that the boiler be right close to the furnace; of course, this arrangement is preferable as regards utilizing the most of the escaping gases, but then it would be difficult to interpose so good a damper time the heat of the passing gases. controry, it is recommended to insert between the boiler and the furnace a canal of refractory masonry, with thick walls and 4 to 6 meters long, since in this case the resulting loss of heat would be only trifling, and the damper, which would be inserted close to the boiler, would not be so easily attacked. This damper should best be made of strong iron plates 12 to 15 m. m. thick

It is also an advantage to keep the boiler continually in use, in order to avoid loss of heat due to frequent interruptions. If the distance is great, this should not be considered an obstacle, since steam can be led 100 to 150 meters without injury, if the steam pipes are well isolated, elastic compensating pieces inserted at definite distances, and the steam be passed through an apparatus for collecting the condensation water before it enters the en gine.

It is expected that in the course of two weeks Hussey, Binns & Co., Pittsburgh, Pa., will be up and at it again. Their works, which were so recently destroyed by fire, are fast approaching completion. They are now under roof and the siding nearly on. Shovels will be turned out with much better facility than they were in the old works.

The Colorado Central Railroad, which is 21 miles in length, is built among the rocks and ledges, and is known to be the crookedest line ever built. At but three places is the track iron sent subsequently from several mills was straight, and then only for a distance of 300 essentially poorer in quality than that sent at feet. The legislature granted the company a charter as a joke, never expecting it would be and the strength imparted by the compression | built, yet it has proved a profitable investment



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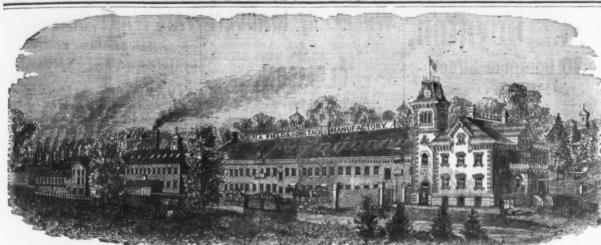
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BUSINESS ITEMS.

NEW JERSEY.

Under an arrangement with the creditors, the Grant Locomotive Works, at Paterson, have retwo or three months, to complete 10 of the Russian locomotives, and to undertake thereafter any new work that may offer. The works will

still be under the management of D. B. Grant. The Blees Mfg. Co. have decided to locate heir works at Bordentown, the citizens agreeng to furnish \$25,000 for the purchase of a site and the erection of buildings.

The rolling mill at Dover has gone into oper-

PENNSYLVANIA.

The Forsyth Scale Works, which we some ne ago noticed had been removed from Roch ester, N. Y., to Erie, are now operating success fully at the latter place in the shops of the Novelty Iron Works. A new lease has been given to the life of the enterprise, and the large number and excellent quality of scales made under the Forsyth patents will build up an important business in Eric. The same establishment is engaged in the production of a larg class of wrought iron goods, such as books hasps, hinges, staples, rings, &c., with patented machinery, a market for which was some time ago established throughout the Western and Northern States .- Cleveland Review.

They are running full at the Beaver Falls Cutlery Works, and numerous orders for California are reported. They are now introducing ew machinery to roll the steel into forme f blades and handles instead of hammering, which will do the work with less labor and ring out greater uniformity of the product.

Operations will soon be resumed at the Copperative Iron and Steel Works and the Grove Bros. blast furnaces, Danville.

The Tanite Emery Wheel Company, at Weiss ort, have shut down their works for a time or the purpose of making a considerable enrgement of their manufactory.

The operations of Hussey, Dravo & Co. Pittsburgh, have not been materially interfered with by their late fire. They lately turned out a cast steel pinion weighing 1590 pounds. which was shipped to Rogers & Burchfield's ron works, on the West Penn Railroad.

The Emaus Iron Company's Works, at Emaus ogether with all mines and other property benging thereto, are reported to have been eased to C. H. Nimson

The contract for building the engine for the

Greenlick Narrow Gauge Railroad has bee. given to the National Locomotive Works, Con nellsville. Orders for 50 bridges are now on hand a

the Keystone Bridge Company's Works, Pittsburgh. The orders are from different parts of this country, and from Canada, Brazil and else

MASSACHUSETTS

The J. C. Hoadley Company, Lawrence, have early completed a new style stationary engine with the Hoadiey automatic cui-off, of from 4 horse-power upward, which they intend to manufacture in addition to their celebrated portable engines. They are preparing somportable engines for the Centennial Exhibitio at Philadelphia, and are also, at the request of the managers, to furni-h a portion of the motive ower at the exhibition.

The Wason Company, Springfild, have finished their South American order, which consisted of 9 passenger and baggage cars, 16 flat cars and 10 cattle cars.

D. S. Goddard has decided to remove his wire works, lately purchased by him in Boston, to Worcester, and has bought land on Southgate street, where he proposes to locate his shops.

CONNECTICUT

The Pratt & Waitney Manufacturing Com-German government, and expect orders from other European powers.

The manufacture of the Manning machine for Machine Company, at Bridgeport.

OHIO.

The Rolling Mill Company, at Alliance, has een compelled to assign. Liabilities, \$400,000; a:sets, \$250,000.

The Keeler Scale Company, Cleveland, have ecently erected one of their patent miners' scales for Jones & Rebrer, at Falls Creek, near Reynoldville, Pa., with an improvement by which three hoppers are attached, giving the facility of coarging the scale from three differ ent tracks. Each load (from whatever hopper) weigh d and d scharged before another is received on the scale. By this means several caror wagons may unload into the hopper just as fast as they become empty, thereby avoiding the necessity of each car having to wait un if the one ahead of it has been unloaded, as is the case with other scales. The company contem plate removing their works from Cleveland to Pittsburgh, Pa, early the coming fall, which arrang ment will give them much better facili ties both for manufacturing and snipping scales.

Certificate of incorporation has been filed by the Cincinnati Stamping Company. The capital is \$200,000.

INDIANA.

The Indianapolis Rolling Mill has taken a contract from the Jeffersonville, Madison and Indianapolis road to furnish new iron ratis sufficient to relay 17 miles of track, the rails to be furpished as fast as the company needs them, between this and Nov mber 1.

Mesara. A. N. Hadley & Co., of the Quaker Machine Works, Indianapolis, have contracts to the amount of \$35,000 to complete before August first; they have been compelled to increase their force in consequence, and are now working over 100 hands.

The Atlas Works, Indianapolis, ore now emloying about 115 hands, and within a week will have new machinery in place so as to increase the number to 125. They are having an unusual rush of business, and with all their sumed operations, employing 200 or 300 men for facilities can hardly keep alreast of their erd is

GEORGIA.

The Atlanta Herald states that the creditors of the Scoffeld Rolling Mill had a meeting in that city on the 26 h alt., and came to a full and complete understanding. A committee representing all interests was appointed to retire, consult and report the name of a suitable man for receiver. After a short consultation, the committee reported the name of Maj. A. Leyden, who was st once accepted by the meet-Maj. Leyden's appointment will be ing. moved for at once, and he will accept and take charge. Mr. Scofield will remain in charge of the mechanical part of the mile as superintendent. He will order coal and iron at once, and the mill will be opened for work about the 5th of July next. Thus is a most unfortunate affair ended, and thus are 350 mechanics put to active and remunerative employment again. CALIFORNIA. The hoisting works for the California and

Consolida ed Virginia mines, now in course of manufacture at the Pacific Iron Works, is probably the most massive mining machinery ever made. It is to be used on the "C. & C." shaft, the joint shaft of the two great mines These hoisting works are being made on the same principle as those at the Mt. Diable coal The holsting is done from the engine shaft, there being no spur wheels. This will be the first one of the kind on the Comstock, and is of a capacity to hoist 4000 feet. There are two engines, 26 inch bore and 6 feet stroke, fitted with balance poppet valves and cross cutoff. The cylinders are very ponderous, weighing 16,000 pounds each. The bed plates will weigh between 16,000 and 17,000 pounds each. There will be one engine on each end of the shaft, the distance between them being 24 feet from center to center. The shaft is 16 inches in diameter in the main journa's, and 18 inches where the recis are to be placed. Double reels for flat wire rope are to be used. The reels commence at 6 feet and wind up to 14 feet in diameter. The engines are supplied with two ste m brakes, one for each reel, and also a hand brake for each reel. The steam brake is so arranged that the brakeman or engineer can put it on at will, and if the cage should rise higher than it ought to, a connection is automatically made, so that the steam is shut off from the main engines and the steam brake applies itself, thus making accident impossible. There are 6 tubular boilers, 54 mches in diameter and 16 feet Only 4 will be used at a time, the other long. two being re-erved for emergencies. Globe valves are used to connect any pair at will. The clutches to throw the engines into gear weigh 4500 pounds each, and have wr. ught iron bands shrunk around them for additional strength. There are no gear wheels at all, and the two fly-wheels act as brake wheels. Everything will be fitted up in the snop before being shipped. The excavations for the reception of this massive machinery at the mine are nearly completed, and the anchor bolts and plates are being placed in position ready to commence the mason work. It is stated that a duplicate of this machinery has been contracted for by the Lady Washington Mining Company, on the Comstock.—San Francisco Stock Exchange.

Water jackets for smelling furnaces at the Kohler Reduction Works, an t castings for the same are being built by Penderg at & Smith, Ætna Iron Works, San Francisco. The retort pots, fronts, &c., for John Reynords' new chemical works, on the Sin Bruno roads, are also being made at these works

The Pacific Boiler Works, San Francisco, are comparatively a new enterprise, though Ridon pany of Hartford, will soon begin work on an & Tower are among the pioneer iron workers of order for \$250,000 worth of machinery for the the coast. Their shops are located at 118 fivemont street, and their business ranks in magnitude with the largest in the city. They have in band, as a specialty, water fined furnaces for use in making boots and shoes and other heavy smelting copper and galena ores. These intrawork has been begun by the Howe Sewing ces are now used altogether in the Lake uperior copper mines, in Southern Nevada, Inyo county, Ca'ifornia, and in several of the Cerro Gordo mines. They possess this material idvantage over the old style, that they require no fire brick, which mu-t be transported often to great distances, and they never burn out. Taey usua'ly list about five years without re-The cost of a furnace is only from \$600 to \$700.

> The following items of from news are from he Greenup (Ky.) Independent :

> The Beliefonte Furnace was built in 1826. cing one of the ploueer en erprises. The stack has still its original hight, 33 feet with 101/4 feet poshes; the thruble is 43 inches in diameter; the hot blast is of the Davis patent, which here, due to great attention and care, has proved nore successful than at the other fu nuces of his iron region. The yield of the furnace is very uniform; averaging capacity 11% tons, year in and out. The present blast is but a small one, the depression of the iron business not favoring a larger on . The lands of this furnace. embracing the Amanda, Belletolite and Clifton tracts, extending from beyond Coulton to the Outo River, represent an area of 20,000 acres, containing the upper ore veins in their full de velopment as well as Coaiton an i other ores.

The new furnace (Charlotte) makes her landing at the Grayson depot. Teams are . dug and coming regularly to and from that lice, presenting almost as lively an appearance as was presented in the days when Iron Hill lived and prospered.

Raccoon has blown out, to put in a new A hot blast charcoal blast furnace, 62x14 feet, is being erected at Cedartown, Ga., by a M. West.

West.

Balefonte Company have commenced receiving ore at Raedville; they expect to receive about 35 tons per day.

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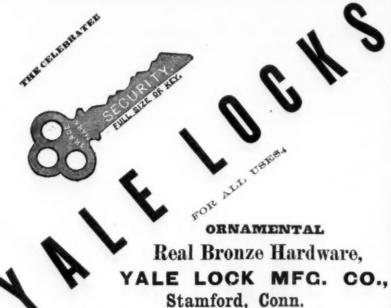
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80 Beekman Street, NEW YORK,

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lined on M tooth, Telegram Dated Oct. 1st, 1874. STATE FAIR, EASTON, PA.

To HENRY DISSTON & SONS: I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diame ter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—The Iron Age, Oct. 8, 1874.

For fuller report of this exhibition see the Easton Morning Dispatch of Oct. 1st, 1874. Henry Disston & Sons cannot furnish Lightning



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A large Stock of Cross Cut Saws constantly on hand. Orders filled promptly. Dietrich's Double Handle One Man Cross Cut Saw made with any kind of tooth desired. Our patent method of grinding Hand Saws makes them superior to any in the market. Send for Illustrated Price List.



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HORSE SHOE NAILS.

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Rogers' Self-Sharpening HOE.

The best Hoe in market. It will not batter or Bolles Hoe" or any Hoe in market.

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ormity.

rfect Accuracy in Thickness.—My saw ground on a patent machine, automatic lo_Llu ation, grinding off the thick places upon the before the thinner parts are reached, and when aw is removed BALANCES PERFECTLY, while of positive of the right accomplishment of the

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REDUCED PRICES. Set Iron Dogs, 34 to 2 in...

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Bright Metal CAGES. BIRD NEW YORK.

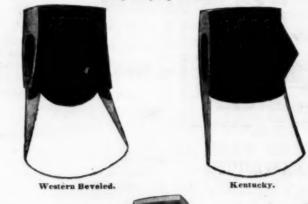
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And the "Patent Ivery" or Celluloid Knife. These Handles never get losse, are not affected by het water, and are the most depaths knives known. Always call for the Trade Mark "MEHIDEN CUT-LKRY COMPANY" on the blade. Warranted and sold by all dealers in Cuttery, and by the MERIDEN CUTLERY CO., 49 Chambers Street, New-York.

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PATENT FINE PEN & POCKET CUTLERY

The only Knives made that are put together in such a minner that there is no strain on the covering or frail part of the knife. We warrant our knives equal in cutting qualities and workmanship to any made, and are ac nowledged by English makers as the Best American Knife. We also make

NICKEL & SILVER PLATED POCKET KNIVES

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For Sale by all the principal Hardware Dealers Malleable Iron Castings

Of Superior Quality made to order.

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Table & Pocket Cutlery

WARHANTED TO BE MADE OF THE BEST MATERIAL

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AMERICAN PEN AND POCKET KNIVES,

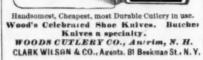
Aaron Burkinshaw. AB MASSACHUSETTS My Blades are forged from the best Cast Steel, and and Sewing Machine Locks.

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PHILADELPHIA, July 12, 1875. Notwithstanding that the week just past has been broken by the Fourth, and that we are in the middle of summar, a generally better feeling shows itself in trade circles. The movements of grain eastward are very large, and the prospect of a good European market for the balance of the old crop an! the supplies of this year's harvest is good. As an evidence of this movement and of the really decided improvement in amount of goods handled, if at mall margins, we learn that the Pennsylvania Railroal carried during June an unprecedented quantity of freight. The number of cars moved on the Philadelphia division of this road in June last was 76,870 or 13,858 more than were handled in the same month of 1874. The progress of the road since 1867 in this department may be judged from the following igures for same month each year, viz .: June, 1867, there were moved 22,736 cars; 1868, 27,678; 1869, 31,523; 1870, 34,717; 1871, 40,350; 1872, 44,612; 1873, 57,788; 1874, 63,102; 1875, as above, 75.680, or 54,134 more cars of freight moved than in 1867, and nearly double the num-Of the Eastern freights about one-fourth goes to New York; full one-half or more to Greenwich Point on the Schuylkill, to the grain elevators, and the remainder to Girard Point, petroleum wharves and the city depots and wharves. Some queer figures are deduced from this statement. Thus the number of ars moved this year in June, if in single train, would extend 446 miles, or nearly one hundred miles beyond Pittsburgh if started at Philadelphia; or, giving twenty-three cars to a train, would make 3342 trains for a working month of 26 days, or 129 trains daily This is exclusive of passenger trains. Such was the demand on the road that all the engines was the demand on the road that all the engines and many of the men were worked any and might, and during the day spell there was danger of the water supply running short, as these freight trains alone, last month, required, between Philadelphia and Columbia, 1,290,000 gallons of water daily, or 7,740,000 weekly; the passenger and yard engines using 4,800,000 gallons more weekly on this division. Keeley's motor, with a tumblerful of water to run a train from New York to Philadelphia, is, consequently, much needed here. It we could compute the wear and tear on all this immense amount of rolling stock and track used, and get at the amount of iron and steel required in this one month for repairs to this enormous number of ears used, it would furnish important data as to the consumption of iron in one branch at least.

least.

We are accustomed, or have been of late, to decide from rails, as against steel, for durability; but it seems that a committee of the American Society of Civil Engineers, appointed to examine and report on various subjects. to examine and report on various subjects-con-nected with life of from and steel rails, have lately expressed the opinion that they have been surprised to find so little difference in this been surprised to find so little difference in this lift. Since they last reported, 28 samples of John Brown & Company's steel rails, and seven samples of from rails roiled by the Bethlehem Iron Company, have been examined. The steel had been down from four to seven years, and the from from four to ix years, all on the main line between New York and Philadelphia. To all appearance both steel and from were as good as new except in loss of metal, which varied from a few hundreths up to 0.50 lbs. per yard, averaging 0.29 lbs. in steel, and in from from 0.5 to 0.6 lbs., averaging 0.325 lbs. rer yard. The previous examinations reported the loss in steel at 0.3, and from 0.38. The conclusions are, that it from was perfectly welder and loss in steel at 0.3, and fron 0.38. The conglusions are, that it irren was perfectly welded and as bard in the middle of the head as in the top, and not loaded so as to crush or condense th metal—or not over 25 000 lbs. per square inch—it would wear nearly as long as strei. The advantage of steel are absence of weld, that it is orthooly as hard in the middle as on the crus probably as hard in the middle as on the sur probably as hard in the middle as on the surface, and will sustain without alteration a weight per square inch which would gradually condense and finally destroy the i.on. So says the report of several eminent engineers, and it is simply another confirmation of the state-ament that "bad iron rails made the steel rail trade." It further shows that the results attained from the use of the Danks furnace with Williams' improvements, as conducted by Graff, Bennett & Co., of Pittsburgh, by which iron sheets of infinitesimal thinness have been rolled from muck bar direct, enable the production of a rail from which shall be of equal hardness in the middle as on the surface of the heal; and, moreover, that, contrary to general custom, an entire iron rail could be produced without a weld, and yet possess sufficient strength and casticity of web. Such are the benefits which accrue to the trade and the country from associations of practical men, expects in their specialty, and who devote their time and knowledge to investigations of such a nature.

A working trial of the American double life face, and will sustain without alteration

itime and knowledge to investigations of such a nature.

A working trial of the American double life boat, exhibited at the Franklin Institute Exhibition last fall, was lately made here and at Atlantic City with the b st results. This boat, fitted for sea service, sailed from here to Atlantic City with some thirteen gentlemen. At a their destination the boat was run through and parallel with the surf, which was running very high, and, though several times filled with water, could not be swamped, the water passing out through valves. She was also run into the surf, head on, within 30 feet of the shore, and then rounded to in the milst of the breakers and put to sea. Such tests would appear conclusive as to the im ossibility of swamping or up-cetting this boat. The specialty consists of two hulls, bolted rigidly together, sir it; the compartments and false bottoms to hold water and provisions. She is built of oak and cedar, 25 feet long, by 10 feet beam over both hulls; is a double-ender, having a rudder at each end of each hull, both tillers so connected as to work together.

Although most of our attention is attracted to iron ships the revival in wooden ship building must not be lost sight of. A magnificent specimen of this art is now at our wharves, and has lately been completed at Bith, Maine, for some merchants of this city. She is carred the City of Publadelphia, and is one of the largest wooder sailing vessels afloat, being of 2300 tons carrying capacity. All the latest mechanical improve ments are on board, as patent capstans, a steam engine on deck to work pumps and handle cargo, etc. Her stanung rigging is all of best charcoal wire five inchrones. She loads with coal for the Mare Island Navy Yard, Cal., and will, it is expected, make the passage in 105 days or thereshous. A working trial of the American double life

"DRAW CUT"
BUTCHERS' MACHINES.
Choppers, Hand and Power.
Stuffers,
Lard Presses.
Warranted thoroughly made and the Bast in Uss.
MURRAY IHON WORKS,
Burlington, Iews,

"Boouts.

The direct telegraph cable seems to have stimulated enterprise in transmitting news under the ocean; and now we have projected a novelty which may be considered almost as startling as the Keeley motor, but it is to be hoped more practical. This is a pneumatic tube despatch laid on the bed of the Atlantic, from England to the United States.

The tube is to be composed of an elastic composition, which will harden under the action of for sale by the sheriff.

the sea water until it will resist a pressure of nine tons to the square inch. This tube will be pressed flat and coiled in tanks, water being admitted to expand it as paid out. The water will be allowed to remain until the hardening is complete, when, as it would be impossible to move a column of water 3000 miles in length, the tue will be emptied by decomposing the water with electricity, conducting whres for the purpose being incorporated in the material of the tube. If this is not an original idea we await further, but it is said all the experimental parts of the plan have been proven on a sufficiently large scale to attest the practicability of the scheme, that the money is up, and that by July 4th, 1876, a pneumatic despaich will be working under the ocean. If a small tube of this kind, why not a larger one, and hence a railway, and, consequently, the oft predicted means of crossing the ocean beneath its surface on lighting train time. We await the completion of this scheme with the introduction of the revenue water to present the presence. PHILADELPHIA CORRESPONDENCE. the sea water until it will resist a pressure of face on lightning train time. We await the completion of this scheme with the introduction of the new vapor force, and presume, when both are reacy, the problem of navigating the air will have been solved, and render both the form r methods of transportation quite unnecessary.

Indestructible Wood.

Considerable attention is being drawn to the recently patented invention of the Rev. Dr. Jones, of Harewood College, Tavistock, for rendering timber uninflammable, preventing dry rot and decay, and for rendering the softer kinds of timber as hard and durable as oak or teak. The process consists, as we have stated before, in impregnating timber with a hot solution of tungstate of soils, and two of its merits are its efficiency and its cheapness. Threepence per foot cube is about the present cost of the process, and even this small amount will probably be greatly reduced when the demand for the mineral has become sufficient to make it worth while to manufacture it on a large scale. Indeed, Sd. is the very outside price, for, takmg the present price of the material, £15 per ton, and a ton being sufficient to treat twentyfour to thirty loads of timber, or 1200 to 1500 cubic feet, the cost appears to be about 21/4d. per cubic foot.

The public ordeals to which the invention has been subjected have been very severe and quite satisfactory, everything having been demonstrated by actual experiment, which the patent lays claim to; and government has availed itself of the di-covery by entering into an agreement with the patentee.

To render wood uninflammable, and at the same time to impart the hardness and durability of teak to such woods as vellow pine or Swedish fir, is to confer a lasting benefit on all connected with house property and with the con struction of buildings of every class.

As a sample of the tests undergone it may be mentioned that the other week at Chicago, two wooden houses were set on fire, one being of prepared wood, which was not injured at all; the other of unprepared wood, except the framing, which was of prepared timber; this latter house was soon destroyed, with the ex ception of the prepared framing, which was left intact.

Dr. Jones has lately made considerable improvenents in the process, by which he is enabled to render the salt insoluable an i to still further harden the wood, so as to make it still better adapted for railway sleepers, street pavements, etc., or where it may be exposed to the action of water .- Iron.

The first vess il ever built in Massachusetts was a ship launched at Mystic, now Medford, on the 4th of July, 1631, and named by Governor Winthrop, to whom sue belonged, The Ble:sing of the Bay. In the course of the season this vessel made several coasting trips, and soon after visited Manhattan Islan .. New York. 'On this occasion," says Governor Winthrop, "the sailors were surprised on seeing on Long Island Ind.an canoes of great size." Another vessel of 60 tons, called the Rebecca, was built in 1633, at Medford, where Mr. Cradoch had a shippard A ship of 120 lons was built at Marblehead by the people of Salem, in 1636. The business of shipbuilding appears to have received its first impulse about this time from the same cause which threw the colonists upon their own resources for the supply of many of cessaries of life. The prat Boston, of which we have any record, was the Trial, of about 160 tons. She sailed for Bilboa on the 4th day of June, 1642, with Thomas Graves as master, laden with fish, which she -old there at a good rate, and from thence she freighted to Malagar, and arrived there March 23, 1643, laden with wine, fruit, oil, iron, and wool, which was a great advantage to the country, and ave an encouragement to trade." Thus early began the circuitious and profitable trade to distant ports, in which colonial vessels, at no remote period, bore so prominent a part. In 1642 five other vessels were built at Boston. Plymouth, Dorchester and Salem; and in 1644, two of 250 and 200 tons respectively were oui.t at Cambridge and Boston. The first large ship built in Boston was one of \$30 tons, in 1646.

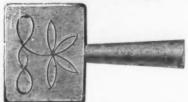
Some interesting particulars were given, in the course of the Schiller inquiry, of the life in the Bishop light-house, which is, in the winter months, cut off from communication with the world for long periods of time. The sea dashes sand right to the top, though it is 110 feet above high water mark, and the ordinary way of embarking and disembarking from a boat is to make fast the boat by a grapnel and then let a man down by a rope, or hoist him up in a simiiar way to the door of the house. In a storm the tower trembles so much that plates and cups fall from the shelves and the glasses of the light treak. According to the Navy, this part of the evidence was given in court, but not from the witness box, and it does not all appear in the

Two Jackson, Ohio, furnaces have gone into

The Steubenville, Ohio, bolt works are offered

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Patent Embossed Steps,





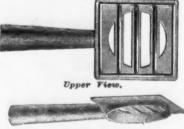
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1871 Pattern Shaft Couplings.



Patent Cross Bar Steps,



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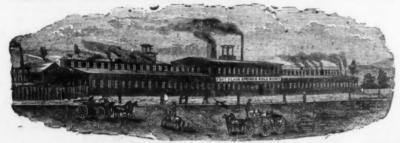
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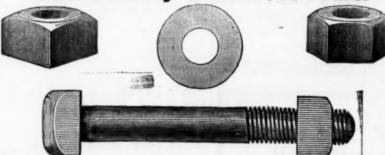
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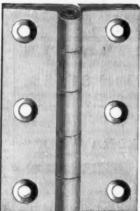
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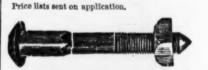
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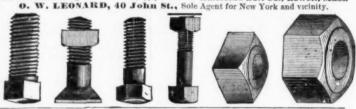
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The Iron Age.

New York, Thursday, July 15. 1875.

DAVID WILLIAMS - Publisher and Proprietor JAMES C. BAYLES - Editor. JOHN 8. KING - - Business Manager

New York, January 2, 1875. Until the 1st instant the postage on newspaper was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make postage as follows on the different editions Weekly, 50 cents; Semi-Monthly, 30 cents; Mouthly, 15 cents.

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City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering The Iron Age. also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver responsible. responsible. Our carriers are instructed to delive papers only to persons authorized to receive them and not to throw them in hall ways or upon stairs and it is our desire and intention to enforce this rule in every instance.

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American Charcoal Pig Iron in England.

Now that American charcoal pig iron is being sold in England as a regular article proportions, the English papers are beginning to find out, according to their own showing, that it is i't good for much any-In the last issue of The Engineer we find the following editorial paragraph:

find the following editorial paragraph:

Much has recently been said in some quarters about the capability of certain United States from master-to send us charcoal pig from, eminently suited for, amongst other uses, chilled roll making; and the most recently published information is, that an Alabama firm of from and the most recently published information is, that an Alabama firm of from a term of charcoal from a day, has shipped 100 tons to Liverpool, at prices which will allow of its sale in that port at £7 per ton. We have later information. It is that merchants in Liverpool are soliciting orders for this same from from engueers and from founders, cl iming for it that it possesses remarkable chilled prop-

erties. We are unable to say whether it does or does not, but we do know that American charcoal iron, for which similar properties were charcoal iron, for which similar properties were claimed, was some time ago tried by engineering firms in this country, and though 216 a ton was given for it, yet it was not only not suitable merely, but it was emmently unsuitable, for the roll made of it was so soft that the impression of the metal manipulated was found to have been left upon the it dented surface of the roll itself. Leading engineers in this kingdom have rausacked every available source of supply for iron suitable to the making of chilled rolls. They have gone even to Italy, to New Zealand, to Australia, and to Siberna; but they have found nothing equal to the cold blast argillaceous irons of Mid-England. Unhappily, there has, in late years, been so marked a tenarginaceous irons of Mid-England. Unhappily, there has, in late years, been so marked a tendency amongst the producers of even flist best of this class to use a mixture of ores in their furnaces, that engineers can depend with much less certainty than heretofore upon uniformity of quality. They are not, we fear, likely to get much help from the United States.

If the facts are as stated, we are forced to the conclusion that the English engin eers have experimented with grades of American charcoal iron which do not chill or else that they do not know how to manipulate it. Cold blast charccal irons are of various qualities. They are graded by numbers from 1 to 6, and the grading is peculiar to them. Number one is very soft; two is soft, but not quite so soft as number one; there is medium, chilling to the depth of a quarter of an inch; four is hard and chills half an inch deep; four and a half is harder still, showing streaks of mottled, and chilling to a depth of three-quarters of an inch; five is gray and white, or mottled; six is white. The two last grades will probably chill all the way through. We have seen castings of these grades in which the chill was an inch and three-quarters deep, and could probably have been as much deeper as the shape of the casting might have admitted of. The difference in these grades results from differences in the working of the furnaces, the softer irons being those which are most perfectly melted, while the harder grades are, generally speaking, produced by increasing the burden of ore in proportion to the amount of fuel used. As the rule, the gradings are quite correct, for the reason that the quality can be determined with approximate accuracy from the fracture. We hear very little complaint of false grading of irons sent to this which founders have received irons too irons sent abroad will be correctly graded, for in addition to the commercial honor which we may assume will govern the acts centive of a desire to build up a foreign demand, which can only be done by exporting qualities of metal which will do what is claimed for them. If the English roll makers will buy the proper grades and treat them properly in the melting and casting, they will have no trouble in securing all the depth of chill and hardness of

Altogether, the little story of The Engineer is quite extraordinary in many respects. That a pair of rolls should ever have been finished that were so soft as to ake the shape of the metal rolled, instead of imparting their shape to it, is simply astounding. In this country such rolls would never have got as far as the lathe, for the founder would have discovered their softness before they were fairly out of the sand. The degree of softness of a metal may be determined by an intelligent founder from the amount of shrinkage. In car wheel casting, measurement with a the right grade before the wheel has been where a chilled casting had ever been made. If an apprentice should fail to discover such softness in a chilled casting when breaking off the gates and fins, especially if he employed a cold chisel in that work, he might reasonably expect that his departure from the shop, in search of other employment better suited to his capacity, would be accelerated by the foreman's boot toe. The stupidity of the whole proceeding is simply marvellous, and we venture to suspect that our intelligent contemporary has been imposed upon by some one with more regard for the effectiveness of a story than for the accuracy of the statements contained in it. If it is true, however, we think the English engineers who made the rolls in quesof commerce, and there is reason to expect tion would do well to send to this country that the trade will grow into considerable for a few men who understand the busi-

surface which they may desire.

While upon this subject, our English information respecting the physical prop-In some respects they are the most remarkcertain uses are of exceptional excellence

irons, in proper admixture, are expected to but they are wholly wrong in supposing States, is a hale hearty old man, and still make a minimum mileage of 40,000 miles that the pendulum-to use a favorite simunder passenger cars at high speeds, and ile-will traverse any such distance as the best manufacturers sell them with that they suppose in its backward swing. guaranty. They have been known to run 200,000 miles and upward, and some have probably made a much greater mileage, ing values in this country and in Europe, though we have no exact record of their other and deeper and more beneficent service. Below we give a table of the causes have been, and are still, at work to service of a few cast iron wheels under produce this universal appreciation in Pullman cars, constantly in service, over values. The chief agents are steam-power, a road not in the best condition, and subjected to the hardest sort of usage:

read.	Mate bad.	read.	David St Cards	Bad tread.	bad.	er pattern wheel, read.		Сапве.
Bad	Mate	Bad	- Canada	Bad	Mate	To try another pat Bad tread.	1	
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	2 000	Mar.	- Comment	Mar	Aug.,	Feb.,	-	Date Made
711	711	79,328		200	64,383	90,173	90,188 173	No. of Wheel.

It is to be noted that these wheels, contrary to the American custom, were replaced under passenger cars. In railroad practice wheels which have been taken are invariably replaced by new wheels, are to be the future effects upon the and the old ones still fit for service are market, but we have heard of instances in used only under freight cars. The Pull- dustries of the increasing application of man Car Company's practice is somewhat soft too chill. We may suppose that all different, but its wheels are very closely remember that a very large part of the inspected and are taken out long before there is any danger of breakage. Bad tread the world's population, have yet to indicates that the wheel was either getting feel the quickening impulse which shall of the makers, they have the additional in- flat from wear of the brake shoes, or becom- compel them to develop their natural reing "pitted" or "spotted" on the tread, an early sign of wear.

Among the other uses for which cold blast charcoal irons of various grades are tion of the world it is probable that nearly employed in this country with conspicuous nine hundred millions are awaiting the insuccess, we may mention soft and chilled troduction of steam-power into the counrolls, castings for agricultural implements tries they inhabit, and without it they requiring strength and lightness, castings must remain outside the busy circle of the for punches and shears, heavy hammer castings, hydraulic press cylinders-for which the best mixture is three parts Africa, are thus situated, and when new number one with one part of the the introduction of steam shall develop middle or chilling grades remelted, say a the vast productive capacity of these mixture of one, three, four and four and a countries, the volume of the world's trade half. This makes a most admirable metal, being exceedingly strong and susceptible of the most perfect finish which it may be necessary to give it. For field and heavy impossible any return to what the retrosartillery charcoal iron is of decided value. pective economists, who compare 1875 The gun metal of this country is cold blast charcoal iron, melted and remelted until ciation in values, other than that sudden its maximum strength and toughness is and unsubstantial inflation resulting from reached, developing an ultimate strength over speculation, is a sign of progress, and tape determines whether the metal is of of from 85,000 to 40,000 pounds per square in this century, at least, progress is not inch, taking the average of good samples. faced, and we doubt if such a mistake as Nothing has ever been found in this counthat recorded by The Engineer would have try better for locomotive cylinders, sad- the world is now fairly entered, civilizabeen possible in any shop in this country dles and driving wheel centers than cold tion must advance with rapid strides; and tance of the car department, and the necesblast charcoal iron of the best brands, and in the competition of nations for industrial able to find some use for all that we can be to the swift and the battle to the strong. send them, if they are disposed to test it There are many reasons why the United without prejudice or a predetermination to States should become the great producing it conspicuously possesses.

Steam and Iron.

While a great majority of our manufacturers and business men are grumbling about hard times, dull trade and insufficient profits, and croakers are telling us about reaction from too rapid progress and too great prosperity, there is much to warrant the belief that we are about entering upon an era of substantial prosperity and rapid progress, which shall as far surpass anything previously known in the world's history as the means by which the world's work is done to-day surpass those by readers may be interested in a few items of which it was done in former times. A majority of men see nothing in our panic erties of our cold-blast charcoal irons, of two years ago but a reaction following over production and over trading, and they able irons made in any country, and for believe that the backward movement must at the present time is anomalous. The car and value. In an exhaustive article on ante-war standards. With regard to the comparatively few years, and at once atthis subject, published in our issue of Feb. causes of the panic, they would be very tained vast proportions. It is only fifty relary 4th, we gave a vast amount of exact nearly correct if for over production they years ago that the Car Builder was either a and valuable information respecting them. substituted over speculation, and for over coach builder or a carpenter at work under We cannot go over all this ground agair, trading over anxiety to reap rapid fortunes the master mechanic. Mr. Osgood Bradley, but will give a few facts worth remember- in trade by hazardous and, to some extent, who built the first American railway cars dure the treatment it is likely to receive

Leaving out of consideration the influ-

ence of our own and other wars in inflat-

and the progress of mechanical invention which is widening the applications of power to productive processes and increasing the capacity of labor to produce. what ratio the productive power of this nation has been increased by steam-power and machinery, it would be difficult, if not impossible, to tell, but it is certain that it has done so to a very great extent. For purposes of argument we will assume that it has doubled it within fifteen years. follows, therefore, that labor as now supplemented by the power of machinery, and with the advantage of improved tools, is steadily becoming more productive, and in exchange for the services it renders capital it receives, and should receive, a larger aggregate wage as its share of the increased profits of production. This is a fact which those who desire and expect a shrinkage in the value of labor to the standards of twelve or twenty years ago would do well to consider carefully. The same causes which have led to the appreciation in the value of labor, have also led to an increased consumption of the products of labor and an increased expenditure for the necessities and luxuries of life. Within the past fifteen years the trade of the world has heen doubled per head of population, which both calls and accounts for the increased consumption, and all this results from the stimulus imparted to progress by the mighty agent steam. With these facts in mind, we may assume that the proper inquiry at this time is not, whether we are about to witness a shrinkage of values to from under passenger cars for any cause the standards of former years, but what world's productive and distributive insteam-power in the arts. We must world, and a very large percentage of sources and begin producing manufactured commodities to exchange for the products of other countries. Of the total populaworld's activities and industries. China, Japan, India, Turkey, much of Asia and will be increased beyond any present calculation. Steam and iron have together already accomplished enough to render with 1860, regard as "hard pan." Apprelikely to go backward. In the age of steam and iron upon which

we think our English neighbors will be and commercial supremacy, the race will condemn it for lacking the qualilies which nation. Our vast and varied resources of fuel and metals, and our territorial extent giving us climates adapted to all kinds of agricultural products, from the hardy cereals of the North to the fruits and textile fibres of the tropics, are favorable. We have every requisite for a great and varied production, with the enterprise to develop and utilize our resources; and while our merchants and manufacturers are waiting with folded hands for the return of "better times," it is as different as can well be imagined. requires no stretch of the imagination to believe that we are on the eve of an era of unprecedented industrial and commercial these days, when the interchange of cars activity, in which steam and iron are to be has become so general that the Car Builder, the great impelling agents of progress.

The Position of the Master Car Builder.

The position of the Master Car Builder continue until values shall have shrunk to building industry has sprung up within a for it that it possess remarkable chilled prop. ing Car wheels made of Nos. 3, 4 and 4; illegitimate methods of doing business; in New England, if not in the United when away from home on a foreign road,

continues the business which he then took up. Mr. Bradley had been a coach builder, and was naturally the first person to whom the railway companies turned for their coaches. In other cases, where the roads built their own cars, it was done under the superintendence of the Master Mechanic. who had a foreman of the car shop under him. Times changed, the roads grew, and trains became many times larger than before. The increase of traffic and the peculiar and complex nature of the service required of the cars, made the car depart-In ment of greater and greater importance each year. It assumed the form of a new industry; it was a new and constantly changing trade that had to be learned, and which labored under the disadvantage of being without a literature. To some extent this is true to the present time. Except what has appeared in the National Car Builder and in the annual reports of the Master Car Builders' Association, the trade is without a literature now, and it will probably continue so for some years to come. To most scientific men this seems strange, but the rapid growth of the railroad system, and the constant change which is going on in trade, make continual changes in the style of cars necessary.

When the car work of a road became so large, and the details of building so complex that the Master Mechanic could no longer attend to the details of the work and properly direct the repairs, the car shop was generally turned over to the foreman who, in time, attended to the whole car department. Frequently the foreman of the car shop, who had the whole of the car work under his direction, was merely a subordinate under the Master Mechanic. On a few roads this system is still retained. On others the Master Mechanic is also Master Car Builder, but in most cases the locomotive department is as much as one man can successfully attend to. As would be expected, there was more or less jealousy of the new departments, and the Car Builder's power and rank was cut down as much as possible. The result of all this is seen in the fact that while the Car Builder's salary is from \$1500 to \$2500, the Master Mechanic expects two or three times as much money for his services, and often a good deal more. While we do not think the latter overpaid by any means, we do think that higher salaries to the Master Car Builders would be money well invested. The value of the cars of any given road having a large traffic is generally greater than that of its engines. Taking ten of our leading roads and making an estimate from their published returns, we find that the value of the locomotives would amount to \$2,400,000, while the passenger and box cars have a valuation of some \$3,400,000. In the matter of repairs, the car department usually has the heaviest expenditure. From one of the State reports on railroads we take the following items in regard to the proportionate expenditure of the two departments. The repairs of the engines amounted to 41 per cent. of the total amount of repairs of machinery. The repairs of cars amounted to 44 per cent. of the total amount of these repairs. On most roads owning car shops of their own, and doing any considerable amount of new work, the pay rolls of the car department are larger than those of the motive power and machinery. On one of the leading roads of this country the pay rolls of the car department amount to \$70,000, and pass through the hands of a single individual. These facts are sufficient to show the imporsity of having a man of ability in charge of

Another point must be considered here the locomotive rarely runs off from the division on which it is stationed. Here it is worn out, here repaired, and the man in charge of the shop knows that he is responsible for the performance of the engine, while, at the same time, he is able to watch its operation, and see that it gets the proper treatment and the proper repairs. In a word, the Master Mechanic has to give attention to his own engines only. No one else has anything whatever to do with them in the matter of repair, rebuilding or work. ing. With the Master Car Builders the case While the locomotive stays at home the car is sent all over the country, and in as a matter of course, expects that his cars will go off from the home road and be gone perhaps for months. Cars when on 'foreign roads" do not get the same care and attention that they would have at home, although a road is bound to deliver a car back again in as good condition as when it was received. On account of this the car must be built not only to stand the rough usage which it would receive at home, but also in such a manner as to enIf it is not able to do this, if it is not put it is estimated to exceed that of 1874 by up in a scientific manner, if, in a word, its 1500 tons. Australia produced, in 1874, mechanical defects are by any means prominent, complaints not only deep but 11,131 tons of stream tin, or, say, at 63 per loud will be reaching the ears of the Car Builder's superior officers. Such remarks 1873. The increase of 2912 tons is, thereas "we don't want your cars to run over fore, equal to 71 per cent, and well calcu-"our road, they break down too easily and lated to make tin statisticians reflect. The "are difficult to repair," repeated a few bulk of the stream tin produced in 1873 times to high officials, will generally make was shipped in its natural state direct to the furnace was making iron on 21 cwt. of things unpleasant for the Car Builder. As London, while the bulk of last year's tin might be expected, he must have a good was smelted in the colonies, and shipped deal of general knowledge of the wants of to London in 11gots. Tin shipments from railroads and the general methods of Australia to England have of late enjoyed building. An improvement which can the advantage of exceedingly low freights; be put upon a local car may often be in some instances the tin, for the better

utterly impracticable upon a car in- stowage of wool-laden vessels, was taken tended for general traffic, because of gratis, or even a triffing bonus given the sibility of maintaining a steady tempera the difficulty of repairs when away from To serve a road to best advantage, the Car Builder should be a man of good business qualifications. The ex- an additional abundant yield, when propchange of cars from one road to another, the adjustment of losses by accident, pay- to accounts received by late mails, the equal fully to \$5 per ton. Several furnaces ing for repairs and destruction of cars, are called upon to decide. This business is by large amount of money. The arrangements | Queensland. Up to the present time about | full particulars of construction, cost, etc., connected with the exchange of cars since | 500 tons of ore have been dressed at Mount | of these stoves, in our next issue the introduction of fast freight and Bischoff. The company owning the prop-"through lines," have become very com- erty have had many difficulties to contend plex, and no small amount of the work falls upon the Car Builder for adjustment. The office still ranks on many roads below that of the Master Mechanic, and on not a few roads there is no Master Car Builder, but only a foreman of car shops, the opinion in such instances being that anybody can build a car, and therefore it is only necessary to have a man who can look after the shop.

Railroads should consider that in the hands of the Car Builder they have to put, of necessity, a vast amount of property, and that upon his skill and technical knowledge, to a great degree, its preservation and successful working are dependent. Small have for the moment disconcerted all caldefects in the matter of construction in culation. But for the unusually large decars may entail serious expenses in the liveries to consumption in Europe and cost of motive power. Little details in the car department may, if neg- have declined to a still lower figure in conselected, entail the loss of tens and even hundreds of thousands of dollars. These 1874, 4629 tons, against 4313, 5044, 5076, which Gen. Uchatius produces. Gen. Uchatius matters are not of such a character as to 4118, 3460 and 3937 the preceding six be easily learned by the study of books. There are no books upon the subject, for, while the theory of the locomotive has ended with June last, there were delivered been written and re-written, and its con- to consumption in this country no less than struction, management and repair made 2575 tons, notwithstanding the extreme the subject of hundreds of treatises, the dullness in the general metal trade. The freight and passenger car have been en- deliveries in the United Kingdom and tirely neglected, and the Car Builder must of necessity educate himself in his profes- during the first six months of the current sion. We certainly think that the importance of the Car Builder should be more in 1874 and 1873. During June they were generally recognized, and the rank and 1499 against 1652 and 1212. pay be made to correspond with the real importance of the office.

As a class the Car Builders are making most vigorous exertions to become thorough masters of their profession. This is attested by the zeal with which they have sustained their association, by the discussions at both the annual and monthly meetings, and by the labor and time which they have have expended in making and testing models, testing iron and steel, and in various ways adding to their knowledge of their business.

The Tin Markets.

Up to the commencement of the present month, with certain slight fluctuations, tin had been quite steady of late in the European markets, owing to fair deliveries to consumers and diminished shipments afloat from the Straits' settlements. During the past fortnight, however, a heavy decline has ensued, Straits dropping from £83 to £79, mainly in consequence of the large failures in the East India trade, a good many lots having to be closed out to meet emergencies.

The statistical position in Europe at latest dates stood as follows:

C10000 00000 00 V	0000				
	875. n. 1.			1874. June 1. J	
To	ns.	Tons.	Tons.	Tons.	Tons.
Stock of foreign					
in London 2	897	5,946	5,891	2,388	1,960
Banca tin in Hol-	100.	0,000	-,0	44000	21000
land	488	628	963	873	1,530
Banca tin in	400	040	000	010	1,000
company's					
hands 3	738	2,663	2,349	2,786	3,116
	100	4,000	4,020	4,100	9,110
Billiton tin in	000	070	0.000	4 000	0.08
	,053	953	759	1,065	385
East India affoat 2	,582	2,400	1,882	1.663	1,951
Australia afloat 1	,850	1,150	1,250	536	182
Total 12	.108	13,740	13,087	9,306	9,124
					43.04
From what p	CCC	cues, I	WILL	re seer	ı unat

the visible supply in Europe was lessened 658 tons during the month of May, princi- for in the uncertainties of supply from the pally owing to the curtailing of shipments, deemed advisable at Singapore. Should momentary depression, we mean the forced in the immediate future prices materially sales of tin belonging to bankrupt conrecover in Europe, steam shipments via the cerns on the other side, will soon disap-Isthmus of Suez would be made, and unless the June, July and August de- influences of demand and supply. liveries to consumption are liberal, the visible supply will soon be restored to what it was at the commencement of May.

according to the latest official data received, cent., 7012 tons of pure tin, against 4100 in shipper.

New tin discoveries at Mount Bischoff, in Tasmania, Australia, seem to promise erly developed and mined. According greater part of the tin ore (alluvial) is dewith, among which is a very bad road to the works, and until a tramway is constructed the rich deposits of tin at Mount Bischoff will not find their way in money value into the shareholders' pockets. The smelting furnaces at Launceston are in full work, turning out about 20 tons of very good quality tin per week. It is not, therefore, the main land of the Australian Continent alone which boasts of rich tin deposits, but Vandiemen's Land or Tasmania, the important island which confronts it at the South, also. These frequent discoveries of tin in Australia, and the rapid swelling of the supply from that source, America, the metal would, in all likelihood, quence. The United States consumed, in years, the average during the seven years a method of producing cast steel from pig being 4368 tons. During the six months Holland, combined, including Australian, year, were 9829 tons, against 8227 and 7067

LOWEST	AND	HIGHEST	GOLD	PRICE	OF	STRAITS	AT
		NEV	W YOR	к.			
1000	000	- 4- 001		0	-		4

186927%c. to 34c. 187030%c. to 38c. 187139c. to 38c.	187327c. to 33%c. 187421c. to 28c.
GOLD PRICE OF STRAITS TIN	DURING TWELVE MONTHS.
1874.	1875.
July 1	Jan. 1
Aug. 1 22%c.	Feb. 1
Sept. 122%c.	
Oct. 1	April 120%c.
Nov. 1	May 120% c.

July 1... The foregoing shows the rapid decline in value which the metal has undergone, especially during the past few months. At the same time the increased deliveries thus far encourage the belief that our own former estimate of the excess of consumption in Europe and America for the current year has been a moderate one. In an editorial in our issue of April 29, we expressed the following views:

" If Europe continues to absorb tin in the same ratio as has been the case up to the beginning of April, and general trade revives between now and the month of October, without the interference of any political or financial occurrences of a disturbing nature, we believe that a 15 per cent. increase of consumption may be easily attained, absorbing 4275 tons in excess of 1874, when 28,500 tons were distributed, against 26,000 in 1873, and 27,000 in 1872.

In referring to the English and Dutch deliveries during the first six months, an increase of about 20 per cent. will be found, while our own, though not quite reaching 15 per cent., have been also quite satisfactory. The year, so far as consumption is concerned, consequently promises well, the principal check on an improvement in value, having, as heretofore, to be searched Pacific countries. The main cause of the pear, and tin be restored to the legitimate

The introduction of the Whitwell Fire Brick Hot Blast in this country appears to As regards the combined production of promise a very considerable reduction in cast steel gun, and then with half a battery, Banca and Billiton during the current year, the consumption of fuel in our blast fur- offering to supply the Austrian artillery with and thinly-inhabited country, subject to chronic of 1874.

naces, and a consequent economy in the production of pig iron. The first of these stoves to go into operation in the United States is applied to the Rising Fawn Iron Company's furnace, in Dade county, Georgia. This furnace was blown in during the last fortnight of June, and the value of the Whitwell stove may be appreciated from the fact that on the fifth day of blast coke. Owing, however, to the constitution of the coke, and allowance being made for other beside calorific elements contained in it, this would represent production with 18 cwt. of fuel to the ton of iron made

In average workings the builders of this form of hot blast claim for it the pos ture of 1000°, and of producing a ton of pig metal with a ton of fuel, anthracite or In Europe the addition of this stove to charcoal furnaces has greatly increased the yield, with an economy of cost in the United States have adopted this matters that the Car Builder is every day rived from the decomposition of the gran- latest improvement in hot blasts, but as itic rocks, not only at Mount Bischoff, but the Rising Fawn is the first to go in blast no means of a simple nature, and on its at George's Bay and other parts of the with it, we note the result as above for the successful transaction there is dependent a island, as well as in New South Wales and benefit of those concerned, and will give

Scientific and Technical Notes.

The Vienna correspondent of the London Standard writes on June 25: The introduction into the Austrian artillery of the STEEL BRONZE CANNOT

has been definitely decided on after long and furious journalistic struggles. In September, of last year, I gave you minute details of the trials instituted on the Stemfeld, near Wiener Neustadt, with the 8.7 c. m. Krupp cannon, constructed after drawings by Austrian officers. At the same time Colonel," now Major General, Uchatiue, invented a composition that he named "cast steel bronze," which should vie with cast steel. The new material, which is now called briefly "steel bronze," is produced by pressure and rapid cooling of the bronze in casting, and probably by a slight admixture of phosphorus. As is well known, a Frenchman, Lavessiere, produced steel bronze by casting the bronze in "coquilles;" still, the French themselves acknowledge that their steel bronze can bear no comparison with that is no novice in invention. In 1856 he invented iron, the same invention by the use of which Herr Krupp has become a rich man; but in spite of this, I cannot but feel a distrust of his new discovery. In my letter of May 24 I informed you of the results of the trials with the steel bronze guns. Since then, as I have said, a furious journalistic conflict has broken out between the advocates of the Krupp and those of the Uchatius cannon, and the manner in which this conflict has been carried on fully justifies my mistrust. Thus, all the protectionist papers are for the adoption of the Uchatius ca for the same reason that they advocate high I asked two members of the committee which, with twenty-seven votes against one, had decided on the adoption of the steel brouze guns, if they were convinced of their superiority; they shrugged their shoulders, and declared "The Prussian (Krupp) shall not get the order at any price." The defects of the new system are that the tin plates frequently burn out, and that the bore becomes so heated by rapid firing that damp cloths must be wrapped round it. Every soldier should look upon his weapon as the best, and the Austrian artillery cannot feel this confidence in the Uchatius cannon after the trials with the Krupp guns and the newspaper discussions on the subject. The construction is not quite similar. True the calibre of the bore (8.7 c. m.) the number of the grooves, 24, and of the turns, with 45 as the length of calibre, are the same. But the sents considerable engineering difficulties. Krupp bore is 2100 millimeters long, with These, however, are now rarely allowed to rell ring, is closed with wedge, and the touch-hole goes obliquely recent experience having shown that mounthrough the wedge, while the Uchatius bore is tains can be climbed, or, for that matter, bored only 2060 millimeters long, provided with a through, if there be only enough money be copper Broadwell ring, and closed with a flat hind the engineers to give their genius a fair wedge of Uchatius' own construction; the touch-hole is bored in a copper screw, and is perpendicular to the axis of the bore. The drew aline with a pencil across a range of screws are much more durable; they only require to be renewed after 800 or 1000 discharges, and this manipulation can easily be performed in a quarter of an hour, without removing the bore from the gun carriage. Experiments are also being made with the gun carriages projected by Gen. Uchatius and Capt. Kotritsch to suit these bores. The projectile is bolt shaped, with a double case. The Uchatius guns are very cheap-£30 apiece, provided, of course, that the material of the present bronze cannon be used; but before the manufacture of the re quired 2000 can be commenced with new buildings must be erected, and machines must be sent for from Saxony. Mr. Krupp himself is here at this moment to get the order for the Uchatius cannon, at least, but quite without success. It is remembered against him that in the year 1866 he kept back the guns that were ordered at his establishment by the Austrian government till after the peace of Prague The Kolnische Zeitung has published the contents of an expostulatory petition which Mr. Krupp is said to have laid before the Emperor Francis Joseph, and in which he accuses the Austrian war administration of having stolen grounds. The produce of the North of India his (Krupp's) idea in the construction of the Uchatius cannon. He had presented the Austrian Minister of War, first with one 8.7 c. m.

have been constructed on the principle of the dearly purchased at the cost of a railway. 8.7 c. m. cast steel cannon, Austria is bound for the half battery was not a glit from Mr. Krupp, but was purchased of him, and that, oo, unconditionally. Mr. Krupp has no patent for his inventions either in Prussia or in Austria, and the construction of the two guns is, as I have explained, essentially different.

Asiatic Railways.

The failure, or, at any rate, the indefinite postponement, of the last new scheme for cxending to Persia the advantages of a railway system, is worthy of note as exhibiting the real weakness of almost all plans for driving railways through poor and sparsely inhabited countries yet under the absolute sway of Oriental potentates. No doubt the concession granted a few months ago would have found plenty of capitalists to carry it out had the line been guaranteed by the Russian government; but in default of a guarantee withheld-wisely, as we think-by the Emperor of all the Russias, the sinews of war have not been forthcoming. Capitalists, taught by the bitter experience of American lines, are becoming alive to the truth that the mania for extending railways and trusting to population and civilization following them may occasionally be pushed too far, even in a country enjoying a stable government and liberal institutions. There appears no reasonable doubt that the idea of "opening up" and developing a country by means of railways, when the country is under a regular government, will prove ultimately to be sound enough; but it is equally clear that railway extension may be pushed forward too rapidly for the resources of any large country, and that the capital available for increasing means of transit may be scattered over tracts of land destined for a long while to provide no sustain-

ing traffic. So far as India was concerned this principle met with early recognition, inasmuch as government guarantees were found necesssary to draw capital in that direction at all; and the present heavy charge on the revenues of India to make up deficient dividends shows plainly that independent capital was justly withheld except under conditions which practically made the construction of Indian railways an imperial scheme. Independent capital is distinguished from national credit and the acceptance of national liabilities by a broad lin of demarcation. In many cases it is not only sound, but imperative policy to secure the development of national resources by submitting a nation to taxation for payment of loans and guaranteed interest, and in such cases a sound government finds but little difficulty in covering a country with iron roads, but the case is far otherwise when an independent and semibarbarous power seeks to attract independent capital without any guarantee but its own. Free capital will flow almost anywhere in search of immediate return, but cannot and will not afford to wait till trade is created by its agency, and begins tardily, if ever, to return dividends commensurate with the risk incurred by confidence in Oriental governments. A line from Tiflis to Teheran, and thence to Bushire, may look well enough on paper, and, doubtless, would aid in developing trade between Russia and Persia and the Persian Gulf, but the reluctance of the Russian government to guarantee schemes in this direction shows only how well informed that government is as to the supposed wealth of the country it has been proposed to traverse. The connection of Tiffls and Poti-a port on the Black Sca-with Teteran, Resht on the Caspian, and Bushire on the Persian Gulf, although the salient features of the scheme recently fallen through, hardly includes all its magnificent possibilities. from Teheran-supplied with railway communication to three great seas -a line was to be pushed by Meshed, Herat, Candahar and the Bolan pass, to British India, through a country which, for at least one-third of the route, prescope. Things have changed since the promoters of the immortal Glenmutchkin Railway mountains, and thought they had done a bold thing. A range of mountains more or less now matters little if sufficient traffic can be secured for paying expenses, but in this momentous "if" is included the weakness of nearly all the schemes for running railways across the Asiatic continent. Long ago it was pointed out that the Euphrates Valley line, with a continuation along the shores of the Persian Gulf and Beloochistan to Karachi, could never be a paying speculation from the want of in termediate sustaining traffic. From Karachi to Bushire there might be traffic if water carriage could be competed with, but between these two points there was nothing, absolutely nothing. There is now much talk about the importance of laying down rails on the old caravan routes, but we apprehend that the traffic between British India Kandahar, Herat, Meshed and Teheran, would be found utterly inadequate to the maintenance of a railway across distances so enornous. It must be recollected that Peshawur is so little of a trading center that the extension of our Indian railway system to that purely military outpost was justified on simply strategic finds its way naturally to Calcutta, Karachi and Bombay, whence it can be shipped, at rates unapproachable by railways, to Europe, through

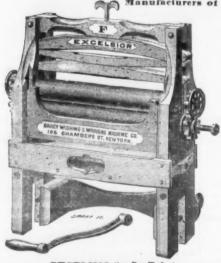
such cannon; but now that the Uchatius guns famine, would find the trade of Herat but too Russia evidently considers that whatever stratto pay him (Krupp) an indemnification. The egic value the line might possess would be news of the Kolnische Zeitung must be false, there rests for the present the project for endowing the Northern deserts of Persia with a railway leading from nothing to nowhere.

While this notable scheme is fresh in mind, we may call the attention of our readers to the fact that the plan of M. de Lesseps to construct an obviously strategic line from Orenburg to Tashkend, and thence, via Bokhara, to Peshawur, has also come to naught. Without doubt. Russia would like this railway well enough, but hardly sees her way to an outlay for which neither present nor future return could be expected. M. de Lesseps' line would simply be the most enormously expensive and entirely military road ever constructed, and has, therefore, signally failed to attract the attention of the European capitalists appealed to a year ago. These disappointments, however, have by no means damped the ardor of projectors, who have recently discovered another ancient caravan route on which to build an imaginary railway. The tea trade of Russia with China has een deflected from the overland route to that by sea to Odessa, as tea sent by water from Hankow to the Russian port, and thence by rail to Nijni Novgorod, can be sold for less than that mported via Kiachta from Peking. The importation of seaborne tea into Russia has only been permitted since 1862, but a few years have nown the immeasurable superiority of that mode of transit. Nevertheless, the tea merchants of Moscow are said to dream of a Sierian railway to restore traffic to its old course. It is suggested that the line in progress from Moscow to Viatka and Perm might be advantageously extended over a few thousand miles of Siberian steppes to Tobolsk, Omsk, Tomsk, Irkutsk and Peking, over a country which boasts about six inhabitants to the square mile; and a "fancy" line is proposed, diverging southward from Omsk into the heart of Central Asia and thus eastward to Hankow-involving a few thousand more miles of railway construction tion. At these projects capitalists can only smile, and will perhaps turn their attention, when present difficulties are removed, to the extension of railways into Upper Burmah, where, as we long since pointed out, a line running from Rangoon and Mandalay, through rich provinces, would effectually tap the important trade of Western China, to deflect which, through Touquin, the French are now naking the most vigorous efforts.—Iron.

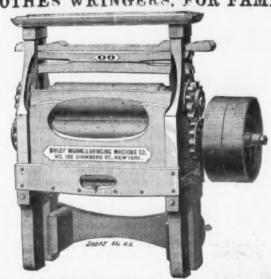
Report on the Iron and Steel Trade in Germany.

An official report, just issued, gives, incidentally, some interesting information upon this subject. Speaking of the depression in the German iron trade, it is mentioned that most of the works in the Rhenish provinces have been obliged to dismiss their foreigners-Italians, Swedes, &c .- and to reduce wages to a considerable extent. This, too, it is mentioned, may be regarded as preparatory to an agitation for repealing the law abolishing the customs duties on iron; and a society of iron masters has been formed at Berlin for the purpose of reviving the iron duties. The object of the society is to convince the government that the law which established a progressive scale of diminishing duties on manufactured iron ought to be repealed; and it is predicted that the iron trade will be ruined unless the final abolition of the iron duties in 1877 be postponed. The opinion is expressed at the same time that the government will not allow itself to be influenced by this agitation, as the iron trade has not suffered more in Germany than in Scotland or Yorkshire. Further, it is stated that Germany requires not protection, but free trade, for the expansion of her manufacturing power. One of the causes to which the continued depression of her manufactures may be assigned is the privilege of government to interfere in matters which ought to be allowed to adjust themselves. In order, however, to show with what energy the people of that country are striving to develop their manufactures, the lowing facts with reference to the steel industry deserve to be recorded. At the beginning of 1872 the number of Bessemer converting furnaces in the Rhenish provinces did not exceed 39, of which 15 belonged to Herr Krupp. The yield of these furnaces could not exceed 140,000 tons per annum. At the close of 1874 there were 69 Bessemer furnaces in full working order. capable not only of producing 500,000 tons of steel, but of supplying the whole of the demand for steel rails and other railway material on the Continent. The trade, however, has been not a little impeded by the government giving authority to the railway companies to raise their carriage rates to the extent of 20 per cent., one effect of which has been to stop the export of coal from the Rhenish provinces to places hitherto supplied by the collieries of that district; and it is stated that the Rhenish and Westphalian collieries produced and exported less coal in 1874 than 1873, aithough some impulse was given to the English coal The Saar coal measures have been spared some of the prevailing depression. Their markets always absorb the supply, and, though prices fell at Saarbrucken, the output was not seriously affected. The total yield of the Saar collieries in 1873 was 4,275,223 tons, while in 1874 it was 4,222,786 tons. The total vield of the Rhenish collieries was 16,219,914 tons in 1873, while in 1874 it did not reach 15,000,000 tons. The average price of coals at the pit's mouth in that district was 10/8 per ton in 1872, 14 in 1873 and 10 6 in 1874. The cost of production is calculated to have inthe Suez Canal; while Persia, a miserably poor creased 40 per cent. between 1872 and the close

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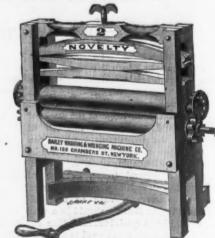
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To to a Cogs, Kolls, 10x1%.

o. 2. Double Logs, Itolls, 10x1%.

o. 3. The above will fit tubs 12 inches thick

NOVELTY (with - traight 4 lamp.)

o. 14, no Cogs, Roils, 10x1%.

o. 24, Double Logs, Roils, 10x1%.

o. 34, 10x16.

in 10x16.

in 10x16.

in 10x16.

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of white mctal, heavily plated with silver. are finely engraved and chased in a great variety of decorations. The linings are of fine stone china. The top is secured to the body of the Pitcher in such a manner that it can be easily de tached and the lining removed for cleaning of other purposes.

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and has been used for a long time in the manufacture of steel rails. They have some 75,000 quantity used in the making of each ton of pig bushels of coal in stock at present, made from iron. both hard and soft wood. They also have 4000 cords of hard wood piled on the banks at the furnace. The kilns have a capacity of 25 cords, turning out an average of about 1000 bushels of coal. We believe that the facilities for taking care of the ore, coal and iron at this furnace are unequaled by any other in the country. A tram road from the mines to the furnace conveys the ore by mule-power in and brings out the pig as soon as it is made. The ore is only the mouth of the crusher, thereby saving a great deal of trouble and expense. This furcountry, and certainly cannot be expected to produce as much iron as the other charcoal furnaces in this region. It only has an eight foot bosh, but for the size, ity, while at the same time it can be manufactured and brought to market cheaper than by any other producers on the Upper Peninsula. After a run of thirty-five weeks, No. 1 was blown in again on the 9th ult., during which time she has had a new hearth and ar iron shell addition of nine feet to her top, and some other improvements and repairs. Since going into blast, June 9th, the product has gradually been creeping up, and she is at present making from seventeen to eighteen tons per day out of Lake Superior specular and Iron Bay Foundry, of Marquette. The blowing cylinders used at the furnace are also of his build, and have been in continual use for seven years.

Mr. David Mushet states in his paper on Iron and Steel," that four tons of coke was the quantity of fuel employed about the year 1810 for each ton of pig iron made in Great Britain. In Shropshire it was ascertained, about the year 1840, by Mr. William Jessop, that the quantity of pig iron made amounted to same year, Mr. Jessop further ascertained that the quantity of pig iron made amounted to 1,396,400 tons, consuming 4,877,000 tons of coal, pig iron manufactured. In July, 1867, the com- & Santa Fe Road.

missioners appointed by a Royal Commission in the previous year to inquire into the ques-The Iron Home gives the following interest- tion of the probable duration of our coal fields ng description of a little furnace which may and their resources, began the important inbe regarded as a type of the class to which it quiry entrusted to them, and periodically for five years pursued their investigation. This in-The Deer Lake Iron and Lumber Company's vestigation of the Coal Commission, as regards furnace and saw mill are situated on section the statistical inquiry, was entrusted to the late 34, town 48 and range 27, two miles and a half Sir Roderick I. Murchison and Mr. Robert north of Ishpeming. It is so called from the Hunt, Keeper of Mining Records, and forms deer lake" bordering on the location. The vol. iii. of the Coal Commission Report, consistpower used in both the furnace and saw mill fng of nearly 500 pages. The deductions drawn is water. The furnace is run by a head and from this report show that in the year 1869 the fall of thirty-six feet through a shute to the quantity of coal employed in the manufacture turbine wheel. Two of these wheels are used of a ton of pig iron amounted to three tons in at the furnace, one to run the crusher and one Great Britain, and the inquiries subsequently to run the blowing cylinders. These wheels instituted by the Mining Record Office show are equal to 60 horse power, and are sufficient that in Shropshire in the years 1872 and 1873, it to run and manage all requirements of the furnace. Their product is nearly all Bessemer pig, average of Great Britain in the same years, 1872 and 1873, we find that 51 cwt. of coal was the

A Sanitary Precaution for Lead Burners .- In modern times it has become customary, in fact necessary, in many cases to form the joints of sheet lead in leaden tanks and chambers by fusing the lead itself with a blow-pipe. In one of the towns of Germany a case occurred where one of the workmen using a hydrogen blow-pipe was taken ill, the symp-toms being those of arsenical poisoning. The handled once, being dumped from the cars to case being reported to a chemist, he at once suspected the presence of that dreadfully poisonous gas, arsenetted hydrogen, in the hynace is the smallest one of the kind in the drogen, it being generated from impurities in the zinc or acid employed. It was therfore proposed to pass the gas through a mash bottle containing a solution of blue vitriol, before igniting it. The arsenide of copper was theretaken in comparison with larger furnaces, it by precipitated and the hydrogen rendered is making more iron, and of a superior qual- pure. This simple precaution is especially recommended to manufacturers of oil of vitriol whose leaden chambers and pans require frequent and extensive soldering. The health of the workman is perfectly protected by this instack went out of blast Oct. 26th, 1873, and expensive contrivance from the action of one of the most violent poisons.

Sterling prepares a varnish for this purpose by dissolving gum copal in paraffine oil, placing the iron in it and heating it under increased pressure. Iron vessels, tinned inside, which can be hermetically sealed, are heated by superhematite ores. She is charged with a bell and heated steam. Scott uses the following mix-hopper manufactured by D. H. Merrit, of the ture:

Varnishes to Protect Iron from Rust.

oal tar			*		,			. ,	 ,									6	gallons.
Vood tar oil														۰				2	6.6
apanese glue Red lead												0				0		28	
ortland cemen	ıt	 		٠	×												,	14	**
rsenic		 *				• •	•		-	_	_		*	٠	*	*	*	14	

The Valentine Iron Works, at Williamsport, Pa., are at present running on small bar iron and wire, employing about thirty-five men. The pig iron used is from West Virginia.

Lancaster Furnace, Shinsheimer, Peytonberg 82,750 tons, consuming in its manufacture & Adler, proprietors, located at Irontown, Tay409,000 tons of coal, or nearly five tons of coal
to each ton of pig iron. In Great Britain, in the
the 2d ult. The owners reside in that city.

The St. Louis Rail-Fastening Company have taken the contract for furnishing all the fastenor an average of 31/4 tons of coal to each ton of ings for the extension of the Atchison, Topeka

STURGES COMBINED PIPE COLLAR.



Ventilator

AND FLUE STOPPER. Is the best thing of its kind in the market. The Wire Spring holds the Collar firmly in place, and the Ventilator also, whether the stove pipe is in or

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Wrought Iron Pipe, Lap Welded Boiler Tubes, Gas and Steam Fitters'

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Upholstery, Gimp, Brush, Card, Pail and Cheese Box Tacks; Leathered, Tinned and Iron Carpet Tacks; Bright and Blued Finishing Nails; Cigar Box and Chair Nails; Trunk and Clout Nails; Brads, Patent Brads, Copper Tacks and Nails; Iron, Zinc, Steel and Copper Shoe Nails; Polished 2d and 3d Fine Nails; Roofing and Slating Nails; Roofing Tacks and Tinned Tacks and Nails of every variety. Any size or style of Tack or Nail made to sample. Orders sent to either Factory or Salesroom will receive prompt attention.

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e most economical and durable Pipe manufactured for Water Works, Oil Lines or Gas Mains,

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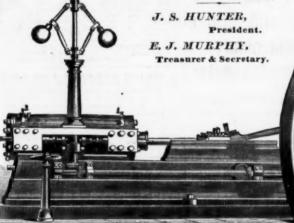


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Engines manufactureu a these works, and are a sufficient guarantee of our capacity for doing first-class work, viz.: The Pumping Engines in the cities of Brooklyn, N. Y.; St. Louis, Mo. and Hartford, Conn., and in the Charlestown, Mass. and Norfolk Ve. Geo. C. Coilins, and the Steamships America and United States. Also the large Horizontal Engine for the new Plate Mill of the Bay StateIron Co. Whitaker & Skirm,

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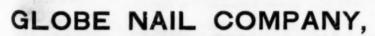
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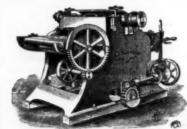
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Coal Wealth of the United Kingdom.

Some carefully epitomized facts relating to the much larger quantity of coal which the United Kingdom is now ascertained to contain, as compared with what was thought to be embraced in the coal fields when the Royal Commission took evidence and made their report in 1870, have just been brought out in South Staffordshire, in a paper read before the South Staffordshire and Mill Forge Manager's Association, by Mr. Wm. Edwards, the forge and mill manager at the works of John Bagnall & Co. (Limited).

With regard to the South Staffordshire district great quantities of coal will be available, in consequence of the successful working of the Mines Drainage Commissioners, under a special Act, and owing to the discoveries of splendid coal in localities not before believed to contain the mineral. The Sandwell estate consists of 1000 acres of thick coal; Lord Calthorp's estate, 1400 acres; General Studd's 500 acres; Westbromwich Colliery Company have 50 acres in the solid to get; Spon-lane Colliery Company, 50 acres of thick coal in the solid, and 60 acres of broken mine; the Blakeley Hall estate, 70 acres in the solid to get Earl Dudley's new colliery at Lye Cross has proved 500 acres of thick coal in the solid, 10 yards thick; Messrs. Hunt are getting coal in three pair of pits, which in all range from 20 to 30 yards thick; and the new coal fields in the Cannock Chase district, embracing a district of ninety-three square miles, have an average thickness of workable coal above 2 feet thick of 50 feet. Of this total about one fourth has been got, and three-fourths, or 1024 million tons, remains to be gotton; while in 1870 it was estimated by the royal commission that there were only 968 million tons left. The district of North Staffordshire has an area of coal fields, exclusive of the Cheadle and Goldstitch basins, of ninety-five square miles, and the available weight of coal, at a depth of 4000 feet, is 3720 millions of tons. In 1870 this coal field yielded 3,873,512 tons of coal. The Cheadle coal field contains about 104,524,000 tons of coal available for future use; and the Goldstitch Trough is supposed to consist of 117,000 tons. Yorkshire, Derbyshire and Nottinghamshire are supposed to have of coal 900 square miles, of a total weight of 28,082 millions of tons. South Wales, in 1870, was supposed to contain 906 square miles of coal to 4000 feet depth, and it was calculated that this area would yield 31,783 million tons of coal; and that if the rate of production of that year (13,664,112 tons) was kept up the coal would last for more than 2300 years; but recently there have been extensive new discoveries. Scotland is supposed to have 9,843,465,930 tons of coal; and Durham 796 square miles of the mineral, or in weight 7,452,250,000 tons. Shropshire, North Wales, Cheshire, Lancashire, Northumberland, or Cumberland, all, with other counties, contain more fuel than had been expected. The production of coal in Great Britain was in 1872 greater than in any previous year, being a total of 120,000,000 tons. Of the 178 million tons known to have been raised anywhere in 1865, 100 million tons were

brought to bank in Great Britain. All the foregoing calculations as to the mineral fuel capabilities of this country were based upon the expectation of its being obtained within what is now regarded as workable depths; and the deepest pit being worked throughout the world in one lift at the present time is the Arley Pit at the Rosebridge Colliery, near Wigan, which goes down 2445 feet; the pit in Belgium whence coal is being brought up from a depth of 4000 feet being worked in three inclines with as many engines .- Iron

Among the curiosities of the export business now being done in England, we have to state that for some time past at least one of the Bir-mingham japan firms has been quite busy in making japan trays for Japan. They are iron japanned, and in sets of the usual sizes, viz., 14 in., 16 in. and 24 in. The patterns are designed to suit the market, being chiefly a mosaic of Japanese characters inlaid with gold, and there are as many as 16 colors used every tray. So elaborate is the artistic work that in decorators' wages alone it costs the makers 18/ per set. We know the price at which the sets are sold by the manufacturer, but it would be unfair to state it. It may, however, he said that, considering the heavy decorative cost, the figure should not lead to any complaint by the merchant. As far as is known, the trade with Japan in this branch is likely to increase, and there is a decided Plans, Estimates and Superintendence promise in favor of a growing profitable communication between this country and that. It cannot but come about that the makers of hardwares will be benefited by the active business which the sedulous Japanese manufacturers are, themselves, doing with our own country; but it is sad to see how Japanese art is suffering.

The Menomines Furnace, of A. B. Meeker & Co., located at Menominee, Mich., which uses pine slabs for fuel, blew out on the last of April, for the purpose of repairing the stack, which was completed some days ago, and the furnace is blowing again. It blew in for the first time May 1, 1874, and has lost eight days, giving 357 working days, in which time it made 7316 gross tons of iron, a daily average of over 20 tons, manufactured fron soft wood coal; two-thirds of coal made from slabs from saw mills, and an average of 136 bushels of coal to

The articles of association of the Indianapo lis (Ind.) Bridge Company were fileda few days ago. Capital stock, \$20,000.

The Hoosier Drill Works, giving employment to 200 hands, are to be removed from Milton to Richmond, Ind.

The Connellsville (Pa.) Machine and Car Company are now extensively engaged in manufac-turing the Close & Smith patent Bessemer steel rail frogs for railway switches. They are now filling a large order for them from the Pittsburgh & Connellsville Railroad Company. This company also do a very extensive business in the manufacture of cars, switch-stands and bridles, and supply coke and coal works with entire outfits, and also make all kinds of gas and steam pipes, iron casting and brasses for mills and factories. They have been working

A receiver has been appointed to wind up the Hancock Iron & Steel Co

Mr. John G. Eberhard, of Akron, Ohio, has nvented, patented and is making prepartions to manufacture hollow cast iron hames

Indianapolis (Ind.) has three establishments where galvanized iron work is made.

A new hearth and hot blast are being put in at the Woodstock Furnace, Calhoun county, Alabama. Will blow about the middle of July.

Work is temporarily suspended at the La Belle (Wheeling, W. Va.) plate rolls on account of the stock of nail plate on hand.

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lesirous of introducing their goods to the Erritial and Continental Markets, are advised to insert advertisements in the newspaper "IRON," lished every Saturday, at 99 Cannon Street,

SCALE: First 3 lines, 3/; every additional line, 10d. Price, 6d. per Copy, or 30/ per annum, inclusive of postage to the United States.

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\$10,000 to \$30,000, either as an investment or an active interest in the best paying manufactory in St. Louis, Mo. The increase of business requires more capital. Full particulars, by addressing

9614 Chestnut St. .

H. C. WHITE, St. Louis, Mo.

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An A I Sheet and Plate Roller. Must be Sober and Attentive. Address,

JOHN M. AYER, Prest., Chicago, Ills.

File Salesman Wanted

To sell a first-class brand of Files in Philadelphia and vicinity. Commission liberal.

Address, HOMER FOOT & CO., 22 Platt Street, N. Y.

Important to Manufacturers. BISSELL, WELLES & MILLET,

uctioneers and Commission Merchants, No. 15 Murray St., New York, Solicit from Manufacturers and others consignments of Hardware and Cutlery for our weekly Auction Sales to the Trade, or at private sale for cash, as desired, Our facilities for moving large lines of goods are unsurpassed. Advances made if desired.

WANTED.—A situation by a young man having had ten years' experience in the Hardware
and Stove Business, either so clerk or salesman, or
would travel. Hardware preferred.
Address,
Office of The Iron Age, 10 Warren St., N. Y.

Merchant Iron or Nails

Wanted in exchange for 300 tons No. 1 Wrought Scrap Iron.

> GILCHRIST & GRIFFITH, Mount Pleasant, Iore

A. PURVES & SON,

Corner South & Penn Streets, Phila.,

Scrap Iron & Metals, Machinery, Tools, Sbafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass. Cash paid for alkinds of Metals and Tools.

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Roller Wanted.

One accustomed to rolling Skelp and

Band Iron. The above can have a good and permanent job by applying to the undersigned without delay. One that can turn rolls would be preferred.

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TO THE TRADE.

Clark's Blind Hinge

Design Patented March 10, 1874.

At an adjourned term of the Circuit Court of the with full force, not even halting for the panic, and their trade extends over several States.

At an adjourned term of the Marica, held in and for the Second Circuit and Northern District of New York, at Utica, in said District, at the Court House of said Court, on

The Honorable WARD HUNT, Justice.

CHARLES B. CLARK. EDWIN L. FERGUSON,

OLIVER S. GARRETSON.

In Equity.

Whereupon it is ordered, and adjudged, and de creed, and this Court, by virtue of the power and authority therein vested, both hereby order, adjudge ard decree, that the Letters Patent of the United States, No. 83,603, dated Nov. 3d, 1868, granted to the complainant, Charles B. Clark, for an Improvement in Blind Hinges, and the Letters Patent No. 7237 dated March 10, 1574, granted to the said Charles B Clark, for a Design for Blind Hinges, are each of

hem good and valid patents.

And it is further ordered, adjudged and decreed, that the defendant, Oliver S. Garretson, has in-fringed the said Patents No. 83,603 and No. 7237 by making, and selling, and using Blind Hinges, con taining and using the inventions described in, and secured, and claimed in and by the said two Letters Patent, and that the said complainants are entitled to have a perpetual Injunction, restraining and enjoining the said defendant, and all claiming or hold ing under or through him, from making, venusing, or in any manner disposing of Bind Hinger or Articles embracing or using the inventions, or improvements, or either of them, or any part thereof described in, and secured by said two Letters Patent No. 88,603 and No. 7237, or either of them.

CLARK & CO.

BUFFALO, July 1, 1875.

TENTH Industrial Exhibition

UNDER THE AUSPICES OF THE

Mechanics' Institute.

Of SAN FRANCISCO.

Manufacturers, Mechanics, and others, are ad vised that the above Exhibition will be opened in San Francisco on the

17th day of August

next, and will continue open at least one month.

The Board of Manazers invite all who desire to exhibit, to send in their application for space without delay to Mr. J. H. CULVER, Secretary, 27 Post St., San Prancisco, who will promptly answer all inquiries.

700,000 PERSONS

from all parts of the Pacific visited the Exhibition of 1874, to see what could be learned or purchased in San Francisco, with its population of one quarter of one million, is in intimate relations with Japan, China, Australia, Mexico, Hawaian Islands, British Columbia, the various islands of the Pacific and contiguous domestic territory.

There is no coarge of exhibiting, and power for driving machinery, etc., is furnished free.

By order of the Board of Managers.

A. S. HALLIDIE, Prest.

Briesen's Patent Agency FOR SECURING INVENTIONS, TRADE

MARKS, &c., IN AMERICA AND LUROPE,

No. 258 Broadway, New York. A. V. BRIESEN.

TO LET.

A Light, Handsome Office.

Possession Immediately.

HERMANN BOKER & CO., 101 Duane Street, N. Y.

REMOVAL.

We have Removed our office and stock of Cutlery to

107 Duane St. PETERS BROTHERS

WANTED.-A first-class business man familwith machinery and manufacturing, capadli: glarge bodies of men, desires a respondition. References satisfactory. Address, IRON AND STEEL,

Care of P. O. Bex 813, Bridgeport, Conn

DROP FORGINGS. The TRENTON VISE & TOOL WORKS, Trenton J., having increased their facilities, are now able to do all kinds of

Iron and Steel Drop Forgings in quantities to order at reasonable rates.

HERMANN BOKER & CO, Proprietors, 101 & 103 Dunue St., N. Y

THE

MCHaffie Direct Steel Castings Co. STEEL CASTINGS,
Solid and Homogeneous, guaranteed to stand a Tensile Strain of 25 tons per square inch. An invasuable substitute for expensive WROUGHT INON FORGINGS or for Iron Castings, where great strength is required. Office, car. Evelina and Levanat Sts.,
Send for Circular and Frice List.

WANTED.—A situation either as salesman or traveler, by a man who has had many years' experience in the general and carriage hardware business. Is an active working man, and can refer to first-class houses in the trade, based on an acquaintance of twenty years. Address, HARDWARE, Box 668, Rochester, N. Y.

Special Notices.

Round Mountain Furnace Iron Ore & Mineral Lands. For Rent.

The above named property, located on oosa River, In Cherokee county, Ala., half mile from 1.7 amount in Cherokee county per day first-class car wheel iron. The ore-red oxide, fosiliferous—averages 58 per cent., and can be delivered at furnace for 75 cents per ton. Limestone \$1.50 per ton, and charcoal at 6% cents per bushel. It requires about 7 per cent. limestone

Address B. A. WILLIAMS, Prest.,

M. DWINELL, R. P. SIBLEY, H. YANCEY.

TO INVENTORS AND MANUFACTURERS

Wanted.

An experienced Traveling Salesman in Hardware, and Foreign and American Cutiery, who has an acquaintance and trade in Ohio, Indiana, Southern Michigan and Western Pennsylvania. Address stating references, conditions, amount of sales, to

A. B. C., 109 Chambers St., N. Y.

for Sale.

For Sale.

Car Shop in Conshohocken, Pa., 50x100 ft. fronting on P. and R. R. R., with blacksmith shop 20x30 ft., engine house 15x30, 25 horse engine, and all the modern machinery necessary. The lot is 135x300 ft. For particulars call on or address,

HUTCHINSON & FAGAN, Norristown, Pa.

INDIANAPOLIS. The Best Retail Hardware Stand

in the State of Indiana For Sale, FOR 30 DAYS ONLY. \$30,000 capital required. Sales now running from \$400 to \$600 per day. The very best rea sons given for wanting to sell, which have no rela-tion with the business. Such an opportunity for safe and profitable investment is rarely ever offered.

R. S. DORSEY, Broker, 8 Bates Brock.

FOR SALE. A Hardware Manufactory

Having an established trade, now in full running order, and making a staple line of goods. Sold to dissolve a pertnership and settle an estate.

Address, **HARDWARE,**

1407 North 7th St., Philadelphia

FOR SALE. Rolling Mill and Bridge

Building Machinery,

Of NEW ENGLAND IRON COMPANY. Upright Corliss Engine, 32 in. cylinder, 5 ft. stroke; theel, 32 tons, 25 ft. diam. Puddling Train, Merchant Train, 16 in., built by

Totten.
Rotary Squeezer, Etc., Etc.
Testing Machine.
Bolt Cutters.

Bolt Cutters.

Milling Machines, and all Machinery necessary for ridge Work. In lots to suit.

Apply to WM. E. COFFIN & CO.,

8 Oliver Street, Boston. A large Retail Hardware business of thirty years

enterprising towns of Western New York for sale at a low figure. A good opportunity to do both a Wholesale and Retail business. Particulars in re-gard to terms, amount of business, etc., and satissactory reasons given for selling, by addressing,

B. & G.,
Office of The Iron Age, No. 10 Warren St., N. Y.

For Sale,

Several Second-Hand Railroad Lo comotives, 4 ft. 81 in. Gauge.

Address, Box 885, Pittsburgh, Pa.

SPECIAL NOTICE.

I have three patents for Dies, Machinery, and Tools for making Augers and Bits, each running seventeen years; date as follows: Dec. 19, 1895; January 31, 1866, and July 3, 1866. There is a spectai cleim on each of the Dies. All persons infringing on said patents will be held responsible to the extent of the law. Russell Jennings.

DEEP RIVER, Conn., Sept. 7, 1874.

DISCOUNT LISTS.

Iron Screws, Revised Lists, 13 Discouts, 75c. each.
Files & Bolts, 5 Bolts, Revised and Old Lists.; \$1 each
Address, with eash, (Copyrighted).
Bayton & Lamberson, 97 Chamber St., N. Y.

Charcoal Blast Furnaces. Having during the past 10 years constructed and put in operation a number of the most successful Charcoal Blast Furnaces in the country, and having *competent corps of workman constantly in my employ. I am enabled to offer advantages in constructing or remodeling upon the latest and most approved plans.

Examinations of Furnace Property made and reported upon when solicited. Correspondence promptly attended to.

J. M. WHITE, Engineer, 22 W. Alexander St., Kochester, N. Y.

for Salt, &c.

Thirty thousand acres, abounding in the several varieties of Hemstite and Magnetic ores, covered with timber; limestone abundant; contiguous to one of the largest Railroads leading east and west, low freights insured; coal within 20 miles of Works. day; cost of Charcoal, 5c. a bushel; fron ore, \$1.75 a ton; lime stone, 80c., all delivered at Furnace. Freight to Pittsburgh, \$3.50, Baltimore, \$2.40. Ores can be placed in Pittsburgh almost beyond competition. For sale, or will be operated jointly.

Address, P. O. Box 863, Baltimore, Md.

For Sale! Hardware Business

In a growing manufacturing town, one of the best locations in Vermont. Business well established and profitable. Stock about \$10,000, in good order. This affords an excellent opportunity for a party with small capital to secure a paying business.

Address, W. H. BIXBY & SON, Vergenness, V6.

For Sale.

A first-class Hardware Business, located in the thriving city of Bloomington. Ills. Above business has been established for over twenty (39) years, and presents to any one desirous of doing an "A No. 1" retail and jobbling trade a most favorable opportunity, Amount of stock about \$15,000. Will be sold at a sacrifice. Ample reasons given for seiling. For further information, address.

further information, address, GEO. BRADNER, Bloomington, Ills. FOR SALE.

An % inch mill train for making Merchant, Band

and op Iron. Will be sold cheap. W. W. JONES, Apply to

Near the Lebigh Valley Railroad Depot, Allentown, Pa.

FOUNDRY PROPERTY FOR SALE,

Or to lease with privilege to buy: consisting of Foundry, Machine Shop, with powerful steam engines, and other buildings. Water front on North River, Peekskill, 42 miles from New York, comprising 21/4 acres. Apply for particulars to

Box 332, P. O., Peckskill, N. Y. To Stove Manufacturers and Foundrymen.

The Carbon Stove Company, Of Burlington, N. J., Will sell their Foundry, with all its appurtenances,

business and good will, upon very liberal and accommodating terms, offering to any party wishing to engage in the Stove or general Foundry Business a rare opportunity. The Foundry Buildings, which are of a capacity to employ forty or more molders, are very convenient

ly located upon navigable tide water on one side, and the Pennsylvania Railroad, with its freight station in front, being on the direct line between New York and Philadelphia.

The Buildings, Machinery and Appliances are ak

in prime order, and the assortment of Patterns, &c., for Stove, Range or Heater work, unsurpassed. Address, for terms or other particulars.

CARBON STOVE CO., Burlington, N. J. For Sale, Hardware Business

In successful operation since 1845. Rare opportunity to secure an old and established business. Stock of deneral Hardware, Iron, Nails, &c., &., will invoice \$4000 to \$8000 Two story brick business room, 28x80, with ceilar under ail, for 48000. After first payment will make such terms as will be easy, and cannot fail to suit purchasei. Will \$48xist purchaser at starting, if necessary. Satisfactory reasons for selling will be given.

Address, Cambridge City, Wayne Co., Ind.

A BLAST FURNACE FOR SALE at Napanoch, Ulster Co., State of New York, on the Delaware and Hudson Canal, with extra facilities, and a cauacity of 20 tons per day Anthracire or i5 tons of Charcoal, together with a splendid water-power, goes with the furnace. The furnace is in good order and could be put in blast in a short time. Will be sold very low on accommodating terms. Charcoal can be had for many years.

Address, H. BANGE,
94 Gold Street, New York City.

FOR SALE. At Lowest Manufacturers' Rates.

GUNS & SHEET ZINC. By LOUIS WINDMULLER & ROELKER, 20 Reade Street, N. Y.

For Sale, Stove and Tin Business.

Will sell, on good terms, one of the best arranged House Furnishing Stores in Canada West, at St. Thomas. The premises are roomy, the buildings having been arranged especially for this trade, with Tinsmith's workshops and benches complete for

Present Stock about \$6000.

St. Thomas is the head quarters of the Canadi douthern Railway Co. To a practical, energet nan this offers unusual advantages. Business wistablished and with good connection. Reason f isposal, present proprietors increasing their who ale and retail Hardware Store next door to the bove premises. Address

HORSMAN & HORSMAN, Iron and Hardware Mercha St. Thomas, Canada West.



at 10e. a copy, general Spanish Weekty Mushet Review. witten and published by the subscribed to a number 188, circulating in Mexico, the West Indies, and Manila, on which certain standard articles of American manufacture are quoted. Specimen Copies tent free. The university also

FOR SALE,

Translator for Manufacturers and Land Companies,

rom and into the ENGLISH,

SPANISH. FRENCH, and GERMAN.

Spanish Catalogues got up correctly and with detact. Address, C. KIRCHHOFF, Metal Reporter of " The Iron Age," Box 3091, N. Y.

Trade Report.

Office of The Iron Age Wednesday Evening, July 14, 1875.

The past week has been without important feature in Wall street, and the markets have declined. Money continues very abundant at 11/2 @ 21/2 to borrowers on call, and prime commercial paper is quotable at 31/4 @ 5 per cent.

The gold market has been dull, and the premium has tended downward. On Thursday the Treasury sold \$1,000,000 coin at 115.94 @ 116.06. The following shows the daily range

Highest.	Lowest
11634	115%
	116
1161/2	115%
	115%
	115%
	114%

The market for government bonds has moved in sympathy with gold. The closing quotations of governments are given below. To-day the Secretary of the Treasury called \$10,000,000 more 5-20 coupon bonds, interest to cease October 14th. This is in response to a request from the Syndicate, which has been very successful in placing the new fives. Railroad mortgages are strong and in good request.

The stock market has been dull and without feature, with principal dealings in Western Union, Lake Shore, Pacific Mail, Northwest

and Eric. We give helow the highest and lowest of to-day's quotations of active shares. The bank statement presents some features which are difficult of explanation, notably the loss of legel tenders. This can only be accounted for on the supposition that, with the close of the fiscal year, there has been a considerable transfer of legal tenders from the National banks to the Treasury. The following is a comparison of the averages of the past

of the past
July 10. Differences. \$280,866,800 Inc. \$1,469,600 16,937,300 Inc. 3,112,700 70,661,200 Dec. 3,170,900 250,405,200 Inc. 4,508,500 18,854,800 Dec. 127,700

The following tables show the foreign trade

nd

movements of the	IMPORT		foreign trade
Total for week.	1873. 89,432,296 7,215,615	\$7,814,9	district of Oak
Among the imp	Orto of -		99 \$186,458,022 merchandise

were articles valued as follows:	CHAIN
Anvils Quan Brass goods	t. Valu
Brass goods	\$1,1
Bronzes	7 1.8
Bronzes Chains Cutlery 1	2,5
Cutlery1	9
Guns29	7.0
Hardware24 Iron, pig. tons	5,01
Iron, pig. tons22	3,46
Iron, pig, tons. .29 Iron, sheet, tons. .150 Railroad bars. .34	2,52
Railroad bara	4,342
Iron, other, tons	15,376
Iron ore, tons	80,123
Metal goods	469
Needles	10,342
Old metal18	5,420
Plated ware	916
Saddlery2	802
Steel1	:858
Silverware742	9,536
Tin, boxes	144
Wire13,785	96,715
Wire	223

	18,	785 96,71
EXPORTS, EXCLUSI	VE OF SPECI	tf 22
e week 1873.	1874. \$6,267,356 152,367,869	\$5,013,248

	ON OF SPEC	IE.	11
For the week \$5,427,800 Prev. reported 145,174,111	159 902 000		1
Since Jan. 1 \$150,601,911 EXPORTS OF Total for the week	\$158,635,219 SPECIE.	\$132,955,399	tr
Previously reported	*************	\$2,959,605 53,944,686	yo Pi

Previously reported.	\$2,959.6	na
Total since January 1, 1875 Same time in 1874 Same time in 1873.	\$56,904,29 \$0,945,51	1 8
Government bonds at the close we at the following quotations:	39,262,450 re steady	-
U. S. Currency 6's. Bid. 1. S. 6s 1881, reg. 122½ 1. S. 6s 1881, con. 119½ 1. S. 6s. 1881, con. 122 1. S. 6s. 1881, con. 122 1. S. 5-20 1862, con. 122 1. S. 5-20 1864, reg. 116 1. S. 5-20 1864, con. 117½ 1. S. 5-20 1865, reg. 117¾ 1. S. 5-20 1865, reg. 117¾ 1. S. 5-20 1865, cor. 119	Asked. 122 % 120 % 122 % 118 117%	ZZZZ

U. S. 5-20 1865, reg. new 119 11 U. S. 5-20 1865, reg. new 119 11 U. S. 5-20 1867, reg. 119 11	17
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U. S. 5-20 1867, con	34
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U. S. 5-20 1868, cog. 119½ 120 U. S. 5-20 1868, reg. 120½ 130 U. S. 5-20 1868, cou 119½ 140 U. S. 10-40 reg. 119¾ 120 U. S. 10-40 reg. 119¾ 120	ni
U. S. 10-40 1868, cou	
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U. S. 10-40 reg 11934 120 U. S. 10-40 cou 11776 117 U. S. 5s. 1891, reg 11776	336
U. S. 58 1991	34
U. S. 59 1981 reg 117% 117	32
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The following - 117	26
The following were the highest and lower	

The follows	117%
The following were the highest and lo	west
Closing quo Bid.	18k, 104 159 104 159 104 159 104 159 166 166 166 166 166 166 166 166 166 16

GENERAL HARDWARE.

Business continues quiet and without rovement

The condition of the Nail market differs little from previous reports. The amoun business transacted during the week is sm and the tone of the market lacks stren well known standard brands, however, men known standard brands, however, firmly held at our quotations. We quote before, 10d., in lots of 200 kegs and over, \$3 net; small lots vary between \$3.30 and \$3 according to quantity.

H. Burden & Sons have issued a circul under date of 13th instant, in which they qu their Horse Shoes at 47/sc. per pound, and M Shoes at 5%c. per pound in Troy, making th in this market, with freight added, \$5 and per keg respectively. This is an advance former price of 121/2c. per keg.

The Rhode Island Horse Shoe Co. have a advanced their Shoes 12½ cents per keg. We quote their "Perkins" Pattern Horse Sho \$5, and Mule Shoes \$6 per keg, delivered New York, Horace Durrie & Co. are the agents in this city.

The Russell & Erwin Mfg. Co. have reduc the price of Hale's Meat Cutters to discount per cent. They quote Iron and Brass Hes Shovels and Tongs, Polished Fire Irons an Coal Tongs discount 50 and 10 per cent which is a reduction from former prices.

Business in Foreign Hardware continues ver light, although we hear of considerable it quiry regarding prices. The tone of the mar ket, especially for staple goods, is firm, and recent English mails confirm the belief that has existed here for some time, that popular brands of Foreign Hardware will be held firmly by the wakers during the coming season. We were shown a letter to-day from Sheffield. in which the writer said: "Trade is dull here but active on good work, especially for the home market. Mr. Butcher and Mr. Wilson both say there is no show for a decline. Advances in Pearl and Ivory goods may be expected." Hermann Boker & Co., agents for Nettlefold & Chamberlain's Screws, quote the following discounts from the American list as their present price for these goods:

Flat Head Iron Wood Screws,

The Wiebusch & Hilger Hardware Co. have just received from the printer's hands their new catalogue and price list of Foreign and Domestic Hardware, imported, controlled or manufactured by them. Many of the foreign lists we are informed, have never been published before, and will be found very useful to the trade. Among the lists reproduced in this book, we notice Wm. Wilkinson & Son's Sheep Shears; Waldron's Hay and Chaff Knives; Butcher's Files and Edge Tools, and a large assortment of German and English Hardware and Cutlery. They are sole agents for Henry Seymour & Co., of this city, manufacturers of Shears; W. P. Kellogg & Co.'s Curry Combs; the lists of

which are embodied in their catalogue.

The "Winsted Toe Calks" have been further reduced from discount 10 per cent. from their list (18c. per lb.) to discount 10 and 10 per cent. These goods, we are informed, are now ordered by the ton instead of sample orders as heretofore, which would seem to prove their merit and appreciation after a fair trial by horse shoers. Horace Durrie & Co., No. 97 Chambers street, are the Sole Agents for these goods, and all orders and enquiries should be addressed to them. In their advertisement on page 32 an illustration of these Toe Calks will be seen.

The following circular has been issued to the

Gentlemen: New York, July 1st, 1875.

You of a few changes in price list of the Pioneer Flax Mills' Twine, as below. We have added several new qualities of Ball and Sewing Twines to our already large assortment, and can us with your orders.

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BORIZONTAL RIM KNOB LATCHES, * New and Improved Design.

No. 206, 3% x2% in., Heavy Iron Bolt, Iron Hub. Iron Slide Bolt, Brass sunk Thumb Piece 35-00 No. 207, 3% x2% in., Heavy Brass Bolt, Iron Hub, Brass Slide Bolt, ennk Thumb Piece 6-25 The Schweitzer Manufacturing. The Schweitzer Manufacturing Co., No. 57 Reade street, have issued, under date of 1st instant, an illustrated catalogue and price list of the goods of their own manufacture, and the special lines for which they are agents. 15:50 are sole agents in this country for Newbould's 18:50 celebrated Files, Chisels, Plane Irons and Tools, carrying a full assortment in stock, and accepting orders for importation; the lists of these goods are embodied in the new catalogue. This catalogue is fully and handsomely illus-48'00 trated, and covers nearly 100 pages; it is nearly bound in flexible cloth caves. bound in flexible cloth cover. The following is their revised discount sheet:

51 00 0356 47 00 0499 700	O precount sheet:
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Steel in the United States.

SPRINGFIELD, Del. Co., Pa., July 1, 1875.
We are satisfied that selling goods below cost wanced our prices 5 per cent. We are still manched our prices 5 per cent. We are still manched our prices 5 per cent. We are still manched our prices 5 per cent. We are still manched our prices 5 per cent. Tang Butcher rold Tools. To secure goods for the fall trade, you will please address all communications for who because of the fall trade, us to Yours, truly, who bearty & Sons, Media P. O., Del. Co., Pa. Catalogue,"

We invite the attention of our readers to the advertisement, on another page, of C. T. Draper & Co., proprietors of the Arcade File Works, Sing Sing, N. Y. This is one of the oldest estabushments of its kind in this country, dating

G. Webster Peck, No. 110 Chambers street, illustrates in his advertisement on page 17 a Croquet or Lawn Settee, with folding Tent. The back of the Settee reverses like a car seat. The canopy can be thrown backward or forward, as desired, as easily as a carriage top. Its dimensions are as follows: Length, 4 feet 3 inches; hight of canopy, 6 feet 6 inches; width of canopy, 4 feet. The top folds up like a the position of the metal being judged favorpocket rule, and can be removed at pleasure. For croquet grounds there is nothing that we know of that will add more to the comfort of the players than this handsome piece of outdoor furniture.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.

WEDNESDAY, July 14, 1875. Scotch Pig.-Prices have fluctuated in both directions since last report, but the market is now steady, and there is a good business doing. The following are makers' quotations:

Glengarnock No. 1... Eglinton No. 1... Manufactured Iron.-Best Staffordshire

Bars are now quoted £10. Rails .- The market is quiet and prices are nominal.

IRON.

American Pig .- Little if any change can be noted in the general position of the market for American Pig Iron. Buyers show scarcely any disposition to operate, even at the liberal inducements offered by some holders, and con fine their purchases to the smallest possible limit suitable to fill their most urgent requirements. Some of the weaker companies who are pushed for money are still offering pretty liberal terms to buyers, but the standard Lehigh makers present a firm front and refuse to listen to any bid below their views. The production is light, there being, as we noticed last week, only 19 jurnaces in blast out of 58 in the Lehigh section, 38 having blown out. Makers appear determined to keep the production close down, so there are no prospects of any increase in the make, un'ess there should be a marked improvement in the consumption of the article. We note sales of some 600 tons of Gray firmly upheld. They are less so while the mar-Forge and North River No. 1, on terms not ket shows the present lack of vitality, sales mentioned. We quote No. 1 Foundry \$26 @ having been made during the week of some \$28; No. 2 Foundry, \$25 @ \$26; Gray Forge, 100 tons Domestic at 5.95c. @ 6c., gold. A \$23 @ \$25; White and Mottled, \$21 @ \$22.

Scotch Pig.-The stock here is so small that holders are inclined to be quite firm in their views, but the wants of the trade are light, and occasionally a cash buyer can pick up a lot a shade below quoted extremes. The advices from abroad indicate a steady feeling, though a fair quantity is offering by cable at at about present basis of values. We quote Coltness, \$31 50 @ \$32; Glengarnock, \$32 50 @ \$33; Gartsherrie, \$31.50 @ \$33; Eglinton, \$30 @ \$31.

Bar.—Refined is still quoted at 2.6c. @ 2.8c., at mill. The supply of Ma..ufactured is pretty liberal, and prices without much strength.

Rails.-There is a moderate demand for New Rails, but the market is without essential change. Steel Rails are quiet, but stock beld with confidence. We note sales of about 1200 tons 50 lb. Domestie, on private terms. We quote at \$47 @ \$50, at the mills, for American, currency, and \$48 @ \$50, gold, for Welsh.

Old Rails .- This branch of trade presents a very quiet appearance, though prices are nominally about steady. We only hear of sales of 150 tons, on private terms. We quote at \$26 @ \$26 50.

Scrap.-Little, if anything, is doing in Scrap, and the values remains nomically the same. We quote at \$30 @ \$31.

METALS.

Copper.-The market is hardening, there being a gradually increasing demand from man- thrown into the market since the resumption, ufacturers, who are getting out of stock, and which for the last week is 146,922 tons over the now commence to replenish supplies. A more shipments for the corresponding week last Sanderson now commence to repleuish supplies. A more cheerful feeling begins to obtain in metal cirvear. Prices, however, are firm and well mainCases, 2
Van Wart & McCoy,
Chans, cks., 2 cles generally, the jobbing demand is becoming brisker, and this week there are evidences that the deadlock is over. Sales of Copper for the week sum up 300,000 pounds Lake on the spot at 22½c. @ 23c. The asking figure is 23½c., while 22½c. is freely bid. Baltimore sells in a small way at 23c. Lots of Lake Superior Copper for export are going forward, and accumulation of stock is thus prevented. While on this side matters are, from all appearances, looking up, the contrary is the case in Europe. The official telegram, at the close of last week, quoted Chill Bars down to £80. 10/@ £81, and Best Selected £89, since when the former are reported £80. Mail accounts are to hand from London, dated July 3. The Anglo-French visible supply on the 1st instant stood 30,024 tons, against 32,275, 39,856, 37,447 and 41,239 in 1874-1871. The average for the five years was, therecles generally, the jobbing demand is becoming tained. 1871. The average for the five years was, therefore, 36,180 tons, the decrease 6,096 tons, or about 17 per cent. Chili Bars stood £82 or the 1st instant, against £78, £80, £104 and £67 the previous four years; average, £82, from which, as we have shown, there has been a de cline of £2 during the fortnight. The statistical position being good, this decline would probably not have taken place in normal times, but as the failures at London continued uninterrupted ever since, Copper, in common with other metals, had, at length, become demoraltyced, and the drooping attitude we are witnessing was thus brought about. But, intrinsically, the position on the other side is as sound as ever, as the above figures go to prove. At a review of troops, held in Piussia the other day, the artillery of the guard appeared with the new bronze guns, which shows that the Prussians are fast following the example set them by the Austrians and French. While the fatal

back to 1848. They quote their goods at \$5 to necessity exists of vieing with each other in formidable preparations for the next measuring of forces, Copper, Spelter and Lead are in good hands, and cannot give way for any length of time. Manufactures are steady, as follows: New Copper Sheathing, 30c.; Bolts and Braziers, 31c. ; Bronze and Yellow Metal Sheathing, 22c., and Bolts, 28c.

Tin-Remains steady here, with a fair amount of business doing from jobbers' hands, ably on this side, in view of the moderate sup plies in the hands of consumers and the trade, while consumption is proceeding at a satisfac tory rate. In Europe, on the contrary, the prospect held out for the moment, while the East India failures continue, is discouraging, and the metal has gone lower, we presume on forced sales of Tin belonging to bankrupt parties, the latest quotation being £79 for Straits, a decline of £4 during the fortnight at London, one of the heaviest drops it has suffered for a ong time past, and while these adverse circumstances remain at work, it may go still lower. The visible supply on the 1st inst. in England and Holland, in private hands, was 9895 tons against 5983 and 5044 in 1874 and 1873. The deliveries during the six months had been 9829, against 8227 and 7067, baving been in June only 1499, against 1652 and 1212. We quote the market tolerably firm here, at the following gold rates, for large parcels: Straits, 1814c. @ 18%c.; English Refined, 19%c.; ditto, Common, 18%c. @ 19c., and Banca, 23c. In a jobbing way, Straits without difficulty brings 18%c. @ 19c., gold. The weakness in Europe seems also to have gained the East India mar ket, Singapore telegraphing \$21.50 per picul, yesterday. Tin Plates, with a steady jobbing demand, have been rather better, and in some instances improved 12½c., gold, per box on larger lots, and 25c. on jobbing lots. We quote for larger lines, ordinary brands, gold, per box: Charcoal Bright, \$8.25 @ \$8.50: ditto. Terne, \$7.50 @ \$7.75; Coke Tin, \$7; and ditto, Ternes, \$6.75 @ \$7. This article, at prevailing low rates, inspires every confidence.

Lead .- The period when greater briskness may be looked forward to with some degree of assurance is drawing near, and if the general signs do not mislead us, we expect a good trade for the fall campaign, and as the more immediately available supply is well in hand, it is fair to presume that prices will then be plump offer of 5-90c., gold, would probably have carried a larger line. Foreign has been devoid of life at 6%c. @ 6%c., gold, nominally, for Common, and 71/2c. @ 71/4c., gold, for Selected. Accounts are to hand from Marseilles Dickinson Henry, to the end of June, when the arrivals from Spain were unusually heavy, causing the market to remain weak, influenced as trade in France moreover was by the disastrous ficods.

Manufactured is sustained as follows: Bar, 8½c.; Phpe, 9½c.; and Shect, 9½c., less 10 per cent, discount to the trade.

Spelter and Zinc.—The trade and con-

Spelter and Zinc.—The trade and consumers do not seem suxious to relieve the combination party of its stock at the advanced rates established, at least not till actual necestity compels them to subscribe to them; it, therefore, altogether depends on the demand for consumpti. I that is now about to manifest itself, and for which the prespects are decidedly encouraging. Domestic Spelter has meanwhile remained inactive at nominally 7.35c. @ 7½c., curret cy, cash and tune. In Foreign nothing transpires, and we maintain the nominal quotations of 7½c. @ 7½c., gold, fair to best brands Sitesian. Mail accounts are to hand from Hamburgh to the 1st instant, where the construction of the the nominal quotations of 7½ c. @ 75% c., gold, fair to best brands Sitesian. Mail accounts are to hand from Hamburgh to the 1st instant, when the markets were quiet, but very firm, 500 cwts. interior "Krawsta" selling at 24-10 marks. Sheet Zinc is quiet at 85% c. @ 85% c., gold, as to brand, ordinary size.

Antimony—Has been quiet at 13c. @ 13½ c., gold, as to quantity, for the moderate lots that have changed bands.

Laughland & Co. Wire, cks., 5

Netting, cs., 2

Laughland & Co. Wire, cks., 5

Netting, cs., 2

Laughland & Co. Wire, cks., 5

Netting, cs., 2

Laughland & Co. Wire, cks., 5

Netting, cs., 2

Laughland & Co. Wire, cks., 5

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Laughland & Co. Wire, cks., 5

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Laughland & Co. Wire, cks., 5

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Laughland & Co. Cs., 2

Laughland & Co. Cs

COAL.

The demand for Anthracite Coal is fair, but not as brisk as it ought to be at this season of the year, owing to the increased quantities who market since the resumption, the market since the resumption, are qood tons over the market since the resumption, the market since the resumption, are quantities are the resumption.

to such changes :

	-	Lump.		Steamer,		Broken.		Egg.		Stove.		Chestaut
Hari White Ash Coal Free Burning White Ash	4 4	\$ 50 50	4	\$ 10 00	4	\$ 70 70	44	8 85 85	5	\$ 30 30	44	8 30 80
Coal schuylkill Red Ash. Shamokin Lorberry Lyk ns Vailey					5	61	3	60	5	30 60	44	30 60
			_						Ξ	_	_	

The Coal transported over the Cumberland Branch Railroad during the week ending July 10, 1875, amounted to 6038 tons, as against 10,001 tons shipped in the corresponding period of last year, showing a decrease of 3963 tons. year, showing a decrease of 3963 tons, the Cumberland and Pennsylvania Railover the Cambernan and Fennsylvana Karroad, for the same period, the sbipments were 45,784 tons, against 36,339 tons shipped in 1874, an increase of 9445 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 1,122,542 tons.

OLD METALS, PAPER STOCK, &c.

We have very little change to note in the ondition of this market since our last report. Business still continues dull, and prices are growing weaker, though nominally unchanged. The demand for Rags and Paper Stock is light, and stocks are abundant. Hemp and Grass Rope are mactive and unimproved, and are selling below quotations. The purchasing prices offered by dealers are as follows:

prices offered by dealers are as follows:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, neavy, 15c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 4½c.; Zinc, 4¼c. @ 4½c.; Pewter, No, 1, 18c.; do., No. 2, 8c. @ 12c.; Spletr, 5c. @ 5½c., Wrought Iron, 1¼c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ½c.

Rags, &c.—Canvas, Linen, 4¾c. @ 5¼c.; do. Cotton, No. 1, 5½c.; @ 6½c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1½c.; Jute Butts, 1½c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paperand Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakur Jank, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 2½c. @ 2½c.

IMPORTATIONS.

Of Mardware, Iron, Steel and Metals into the Port of New York, for the werk ending July 13, 1875 :

Hardware. Baxter A. & Co.
Sheet, bdls., 212
Champion H.
Cast. cs., 72
Crocker Bros.
Pig. tons, 100
Cortis R. J.
Galvanned, cs., 7 Alexander E. L.
Wire rods, lots, 177
Armstrong M. & Son,
Cases, 170 pins, bags, 144
Boker Herman & Co,
Files, cks., 1; cs., 1
Cases, 1
Boote E.
Files, cks., 2 Cortis R. Galvanised, cs., 5
Eneas Jos.
Scrap, tons, 5
Irwin R. & Co.
Pig tons, 400
Laughland & Co.
Hay bands, bdls., 550
Lang W. Balley & Co.
Wire, cs., 25
Bars, 71
Bundles, 220
Nightingale & Kelton,
Bars, 1619
Order. Files, cks., 1
Butter, Pitkins & Co.
Cases, 1
Baldwin R Gun barrels, cs., 10 Brower J. H. Brower J. H.
Cutlery, cks., 2
Baeder, Adamson & Co.
Wire netting, bdls.,
100
Cortis R. J.
Cases, 5
Traces, cks., 2
Casks, 2
Calbour, Robbins & Co.
Cases, 2
Dreyfus Bros, & Weiller

Order. Packages, 765 Fig. tons. 200 Girders, 217 Steel. Brown Wm.
Bundles, 98
Cases, 24
Hogan John,
Cases, 20
Caske, 2
Moore's J. P. Sons,
Bars, 45
Naylor & Co.
Cast, bars, 44
Cast. frog points, 2
Prosser Thos, & Sons,
Mdsc. pkgs., 14
Remington E. & Sons,
Bars 1292
Jacobs, Strouse & Co.
Strips, cks., 4
Tyng & Co.
Bundles, 1
Wheeler E. S. & Co.
Cases, 1
Wheeler E. S. & Co.
Cases, 1
Woodford W. O.
Cases, 41
Wood & Leggatt,
Cases, 30
Order.
Bundles, 1106
Bods byle, 197 Dreyfus Bros, & Weiller, Brown Wm. Cases, 3
Degraw, Aymer & Co,
Chains, cks., 12
Anchors, 2
Davidson Wm. & Co, Casks, 2
Field A. & Co.
Cases, 18
Chains, 14
Mdec. pkgs., 29
Fuller Bros.
Anvils, 90
Files, cks., 2
Edge tools, cks., 2
Cutlery, cs., 1, 1

Cutlery, cs., 1 Curry combs, cks., 1 Gillespie J. D. C. Cases, 11 Hutchinson J. W. Arms, cs., 3
Hildick A. H.
Nails, kegs, 50
Leisauer & Sondheim,
Cases, 1
Lewis & Conger,
Cases, 2 er. Bundles, 1106 Rods, bdls, 127 Bars, 17

Metals. Metals.

Arkell, Tuffts & Co.
Tin. bbls., 63
Bartram Bros.
Lead, pigs. 191
Brown Bros. & Co.
Tin., slabs, 631
Bruce & Cook,
Tin. plates, bxs., 566
Bullay H.
Lead, pigs, 1
Antimony, pigs, 1 Cases, 1
Moore's J. P. Sons,
Arms. cs., 5
Merchants' Dispatch Co. Antimony, pigs, 1 Byrne Joseph & Co. Tin plates, bxs., 580 Canadian Bank of Com-

Canadian Bank of Commerce,
Tin plates, bxs., 1340
Cort N. L. & Co.
Tin plates, bxs., 212
Darrell & Co.
Scrap, bbls., 14
Dickorson J. S. & Co.
Tin plates, bxs., 1297
Eness Jos.
Scrap, brass, lbs., 800
Gossler & Co.
Tin, slabs, 1065

Remington E. & Sons, Guns. c. 5.
Schoverling & Daly, Schweltzer Mg. Co. Midse, pkgs., 1
Sunderson Bros.
Cases. 2
Cases. 3
Cases. 3
Cases. 3
Cases. 5
Challer, c. K.s., 65
Challer

demand for iron from railroads for repairs and renewals, both in plant and rolling stock, must be considerable yet this season, and that higher prices must rule before the close of navigation. In support of their arguments these point to the statement, reliably made, that the Pennsylvania Railroad transported in June last more freight than in any previous month, and that its entire facilities are now taxed to the utmost to do the business offering; to the rapid movenent in grain; the large crops this year, both in wheat and cotton, and to the prospect of good foreign markets for all our surplus These are generally regarded as sound views and have, to a certain degree, their effect on the market, but, as transactions in Pig Metal are made without difficulty at nearly a dollar lower than a fortnight since, have not as yet affected prices. Considering the period of the season bowever, the transactions are, at least, above the amount reported same month in 1874. In Manufactured Irons there is no great activity save in Rails, which move with more freedom Bars are very quiet, and Old Rails and Scrap both duller than hitherto. An order received by a Pittsburgh firm for 20,000 kegs Nails for South American market suggests the import ance of that country as a market for our manu facturers. Prices may be quoted as follows in this market :

PIG METAL.-No. 1 Foundry, \$27 to \$.7.50 o. 2, \$25 to \$26; Gray Forge, \$22 to \$23. Bars.-2.6c. to 2.7c. per 1b.

RAILS.-\$48 to \$51. OLD RAILS. -\$26 to \$27.

SCRAP .- \$30 to \$31 for No. 1 Wrought. Among the sales we note the following Pig Iron, No. 1 Foundry, 1200 tons, from \$27 t \$27.50 for No. 1 X; 2000 tons, No. 2 X, \$24.50 to \$25, and 2700 tons Grey Forge at \$22 to \$23. Rails-1100 tons 56's at \$49, at works; 1500 tons do, same price, for New York delivery, and 500 tons, 50 lb., at \$51, at mill; also 200 tons Street Rail at \$5°; Scrap-450 tons Rough Scrap at \$27.50; Muck Bar, 500 tons at \$43.

PITTSBURGH.

PITTSBURGH. July 13, 1875.

PIG IRON.—The market continues quiet, although there is fully as much doing as there usually is at this particular time. It is customary with a number of the mills to take stock during the first half of July, and the demand for the raw article is very generally light during the time in question. Prices have undergone no recent change; \$24, 4 mos., is still regarded as the ruling rate, and while some furnacemen are holding for an advance, the mills thus far have been able to ottain all they wanted at the price in question. Producers, notwithstanding the outlook at the present writing is not as encouraging by any means as could be deserved, continue hopeful of being able to realize better rates soon, and in some respects the situation is in heir favor, while in others it is not. It is generally conceded that the production, not only here but at those points tributary to the market, has been light all this year, considerably short of the consumption, that stocks, not only in hands of consumers but producers as well, are gradually Ріттявикон, July 13, 1875. all this year, considerably short of the consumption, that stocks, not only in hands of consumers but producers as well, are gradually and steadily being reduced; and even if some of the furnaces should blow in, of which there is not much prospect at this writing, it would be some time before their product would be ready to market. The mills, on the other hand, cannot see their way clear to pay an advance for the raw article, which they claim has been higher, relatively, all the season than the product. They claim it at in order to cope successfully with competing points, the cost of manufully with competing points, the cost of manufacture should be reduced instead of increased

QUOTATIONS. No. 1 Foundry....\$27 @ \$24-4 mor \$27 (0) \$29-4 mos. 95 (0) 24-4 mos. 24 (0) 25-4 mos. 22 (0) 23-4 mos. 28 (0) 30-4 mos. 35 (0) 40-4 mos.

MANUFACTURED IRON.—There is little that is really new to record in regard to Finished Irons, excepting that some Eastern failures have had an unfavorable influence, and caused have had an unfavorable influence, and caused one concern, the Pittsburgh Bolt Co., to make an assignment. So far as the volume of business is concerned there is no reason to complain, as it is little if any behind what it usually sat this season of the year, but manufacturers continue to report rates unremunerative—here is the great source of complaint. Those firms having specialties, in which competition as yet is light, are doing well enough, but makers of the ordinary sizes complain bitterly of unremunerative rates, and not without cause Merchant Bars anotable at 2255 (4)

The Pittsburgh Commercial of July 10, says; The Pittsburgh Commercial of July 10, says: The pig metal market has not yet recovered from the effect of the 4th of July holiday, and still remeins very dull. The price may be fairly quoted at \$24, four months, for standard quality gray forge metal. We can learn of no considerable demand, and but little anxiety to sell at current rates. The stocks are being steadily depleted, and unless some of the furnaces now idle blow in, the supply here and in the valleys will soon be exhausted. We are reported the following

ł	Baics:
l	BITUMINOUS COAL SMELTED FROM L. S. ORB.
	375 tots close gray forge. \$23*50-4 mos. 350 tons inferior. 22*00-4 mos. 200 tons gray forge. 24*00-4 mos. 100 tons medium gray forge. 24*00-4 mos. 59 tons foundry fron 25*00-4 mos. 10 tons foundry iron 36*0:-4 mos.
l	CONNEILSVILLE COKE.
	600 tons gray forge
l	ALLEGHENY COKE.
	300 tons cold short
	200 tons C B charcoal private t'ms,
	30 tons No. 1 extra\$28.00—4 mos.

BOSTON.

JULY 10.—Pig is without any change. The week has been exceedingly quiet, and shows not an tota of interest in any direction. Our quotations remain as last reported. On wharf here No 1, \$29 to \$31; No. 2, \$22 (2) \$27; and Gray Forge, \$21 to \$24. Bar has had rather an exceptional week for July, and sales, although confined to two or three houses who have been fortunate arough to run in peculiar small sizes. confined to two or three houses who have been fortunate erough to run in peculiar small sizes, have aggregated very fairly. The receipts from the West still continue to average about eight cars a day, while the freight yards have heard a lively music in the clatter of unloading and hauling off. The market holds quite strong, our quotation, \$58, being now rather an exceptional price, the average safe coming up quite close to \$60. The demand is now almost wholly from dealers and strepkeepers in the interior. our quotation, \$58, being now rather an exceptional price, the average sale coming up quite close to \$60. The demand is now almost wholly from dealers and storekeepers in the interior, while blacksmiths, carriage or sleigh men, and machinists have not been seen for nearly two weeks. In Common Iron there is the same listics tone, and prices rule nominally from \$52 to \$56, according to sizes. Steel is quiet, although country dealers are making some inquiry for sizes and lengths. We quote American Tool, 15c. to 15½c.; American Machinery, 9½c. to 10c.; do. Cast Tires, 8½c. to 12½c.; Sweet's Excelsior Tire, 7c. to 7½c.; English Tool, 16c. to 17c. Copper is having very little inquiry from manufacturers, but speculators are poking about under the impression that somebody somewhere is going to combine and carry the market up. The real wants of consumers are so very small that a successful bull movement will be necessary to outfit with an overstock of wind and cash. The market quotes spets and futures at 25c. without sales. For manufactured, we quote New Sheathing, 30c.; Bolts and Braziers, 31c.; Yellow Metal Bolts, 28c. to 29c. Lead is hardly so strong as a week ago, although not quo-ably lewer. The companies have quoted old-stock solid down to 5½c. and tea to 5c. in exchange, which is the forerunner to a drop in the quotation of pig. This we still quote at 6c. for Domestic and 6%c. for Foreign; Sheet and Pipe Lead, 9½c., currency; This Lined Pipe, 16½c.; Bar Lead, 9½c., less usual trade or 10 per cent. discount. Antimony has been advanced to 13c. on account of the small stock, and not with any special reference to the demand. Spelter is now to be quoted at \$7.55, 30 days, and \$7.40, prompt cash, all currency. This is in conformity to the action of the ring in its weeting at Clicago, on the 29th inst. Silesian is unchanged, quoting nominally \$7.50. Tim is easy, with little doing. Plates are active; we quote Charcoul I. C., \$9.50 to \$10; Coke, \$7.75 to \$8; and Terne at \$8.50 to \$11, gold.—Com. Bulletin.

ST. LOUIS.

Messis. Spooner & Collins, Iron commission Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of July 9, report the Iron market as follows: Our market is dull, with very few sales. We make no change in quotations, as the disposition of our furnaces is to maintain prices, particularly in Missouri. Pennsylvania and Alabama Irons bave been offered very low, but with rather unsatisfactory results, as consumers do not seem anxious to buy at any price, only to till present wants. We quote as

	fallers on A most times. We quote as
	follows on 4 mos. time:
	Mo. Stone Coal, No. 1 F'dry . \$28.00 @ 29.00-4 mos.
,	" No. 2 F'dry. 26.00 @ 27.00-4 mos.
	" No. 1 Mili 25'00 @ 26'00-4 mos.
	" Charcoal, No. 1 F'dry 28: 0 @ 29:00-4 mos.
•	" No. 2 F'dry 26.00 @ 27.00-4 mos.
	" No. 1 Mill 25'00 @ 26'00-4 mos.
	Tenn. Charcoal No. 1 F'dry 28'00 (4 29'00-4 mos.
	" No. 2 F'dry., 26 (0 @ 27 00-4 mos.
	H. R. " No. 1 F'dry 29 00 @ —4 mos. H. R. " No. 2 F'dry 27 00 @ —4 mos. H. R. " No. 1 Mill 26 00 @ —4 mos.
٠	H. R. " No. 2 F'dry. 27'00 @ -4 mos.
•	H. R. " No. 1 Mill 25:00 % 1 mos.
	H. R. No. 1 Mill 26:00 75 — 1 mos. Massillon, No. 1 Foundry 36:00 76 37:00—4 mos.
	B, No. I Foundry 3. 07 @ 3. 00 4 mos.
١	" No. 2 Foundry 88'00 @ 34'00-4 mos.
	Cold Blast Car Wheeel, Mo 87.00 2 40.00-4 mos.
	" Tenn. 35'00 @ 40'00-4 mos.
	H.ng-
i	ing Rock 58.00 @ 55.00—4 mos.
ì	Mo Charcoal Blooms 75'00 @ 85'00-4 mos.
	Machinery Cast Scrap 90c. per lb.
,	Light Cast 4 '60c, 44
	No. 1 Wrought " 1 10c. "
	Stove Plates %c. "

CINCINNATI.

Mesers. L. R. HULL & Co., under date of July 12, write us as follows: Pro Iron.—A reduced freight rate from a number of furnaces tributary to this market, has caused a corresponding modification of quotations. We note a fair demand for Foundry and Mill Irons, and revise our quotations as below. Car Wheel Irons year quiet.

		HO											
Hanging	Rock	No.	1	報	to	m,	. 1	127	00	0	58.0	0 - 4	mos
66.	46	No.	2					25	UB	0	26.0	0-4	mos
- 54		For	ge.					24	'00	a		-	mos
Virgin'a	No. 1							26	50	0	27.0	1-4	mos
66	NO. 2								50	a	25.0	1-4	mos
14	Forge							24	00	64		-4	mos
Tennesse	ee Nu.	1						26	00	@		-4	mos
+6	For	ge						24	.00	@		4	mos
Alabama	No. 1							26	.00	0		-4	mos
Missouri	No. 1							27	.00	60	28.0	0-4	moe
44	No. 9				0.0		00	26	.00	0	27.0	0-4	mos
		пот	BL	A.81		TO	XX	E C	TAI				
Missouri												-4	mos
6.9	Fore	D						26	00	(ch		-4	moi

MISSOULI NO.	A.zzz	10	F LO	D 3	121.00	V.	et among	mos.
" For	ge				\$6.00	(ca	-4	mos.
Onio No. 1 .							28-00-4	
" Forge.				0.00	23.00	0	2610-4	mos.
Am. Scotch,	No. 1.				25.00	0	26'00-4	mos.
	COLI	BLA	ST (CHA	BCOAL			
Hanging Roc	k Car V	Whee	1 19	tn.	885.00	a	40 00-4	mos.
Missouri	66	9.0			85 00	0	40.00-4	mos.
Kentucky	4.6	9.5					40.00-4	
Tennessee	4.5	6.6			30.00	0	41710-4	mos.
Georgia	84	94			80.00	0	40.00-4	mos.
Alabama	44	4.6				0	40*00-4	mos.
Machinery av	of For	CFR			90:00	0	25:00 -4	m04

Biooms...... 70.00 @ 90.00 -4 mos.

CLEVELAND. Messrs. C. E. BINGHAM & Co., 25 West Main street, under date of July 12, quote the Iron market as follows, 4 mos. time:

	FOUNDRY			
No. 1 Bituminou No. 2 No. 1, Cherry Va B—1 No. 2, No. 1 Massillon.	alley Am. S	cotch	81 29 27 29 97 31 28 27 31	50-4 m. 50-4 m. 50-4 m. 50-4 m. 50-4 m. 50-4 m. 90-4 m. 00-4 m.
	EEL AND M	ALLEABLE	1RON.	00—4 m. 00—4 m
No. 3 Lake Supe No. 4 Nos. 5 & 6 "	rior Charco		32	50—4 m 50—4 m 00—4 m
Nos. 1 and 2 Lab	ce Superior		\$32	00—4 m
No. 1 Gray White and Mott	led		\$26 24	50-4 m

RICHMOND.

Mr. Asa Snyder, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of July 12: There is no special change in quotations since last report. Choice Wheel Irons are firmer, and holders, for the most part, are asking advanced figures; while on the other hand new brands are weaker, and offered at figures inviting to speculators as well as consumers. There has been a steady demand for Wheel Irons for some time past.

	" hot	4.0	6.6	**	\$8.00 @ 35.00 \$8.00 @ 35.00
Va.	hot blast	Coke	Pig Iron,	No. 1 ex.	26.00 @ 27.00 25.00 @ 26.00
46	16	6.0	61	No. 3 ex.	24.00 @ 25.00
Vir	ginia Ant	hracite	No. 1 e	x	27.00 @ 28.00 26.00 @ 27.00

BALTIMORE.

Messrs. Wyeth & Brother, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of July 13: There has been little or no change in this market for the past week, and we continue to report trade flat and unsatisfactory, and all sales made are small and to satisfy immediate wants.

AMERICAN REPINED BAR IRON.

Messrs. R. C. Hoffman & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of July 12: There has been no change for the better in the Iron market since our last report. The same duliness continues, and we look for no improvement in the early future. We quote:

Baltimore Charcoal..... Virginia
Anthracite No. 1...
No. 2...
No. 3...
White and Mottled...

FOREIGN.

PRINCE

(Montieur des Interest Materials.)

Panal Amo FT. 1873.—Media—Basicassin general, and in Media in particular in compared to the compared the proposed and results in particular in control of secontry the former intended by the overdowing of the basis of the Garonne and its tributaries, and the ingreen that people here thinks of noting but the foods. Bain of three weeks' duration has half drowned the compared by the public buildings, bridges, anticlosed, Bain of three weeks' duration has half drowned the compared by the public buildings, bridges, anticlosed and railway material is immense; the losses to mercelatily in this city, and it is a sey impossible to form a clear judgment as to the influence this caisanty with the compared of the compared of

the whole, it should remain impressed on the minds of Coal commany directors that the comparatively prostrate state of European Iron industry demands a still lower range of Coal prices than those ruling at present. The departments of the North and the Fas de Calais have declared their readmess to the State to contribute 9,500,000 francs toward deepening and improving the following rivers and canals: The Aa, the Upper Scarpe, both rivers, and the canals Neufosse, Bourbourg and Calais. These improvements would open new outlets for Coal direct to the sea shore from the great Coal districts, which these departments embrace.

BELGIUM.

(Revue Universelle).

Brussels, June 27, 1875.—Iron.—Transactions for the week have been mainly confined to Merchants Iron, not sufficient in extent to improve the general aspect, which remains cheerless in the extreme. From England the accounts are also discouraging; lower prices seem to impend, and the feeling of uncasiness there react upon the Belgian Iron altuation. Coal.—The strike which we alluded to in our last as having taken place in the Borinage di-trict, and threatening to extend to Liege, has been about oversome, most of the miners having resumed work. Our Coal markets are, for the most part, inactive. Shipments, especially to France, are nearly all carried on by rail instead of by canal, a good many from among which, particularly the Mons canal, have suspended carrying freight for the present. Although companies in Belgrum have, on the whole, been complaining that the extraction of Coal at present prices leaves no profit, one of term has just published its report for 1874, according to which a profit of 11 per cent, on the capital invested has been realized, the latter being about 11,500,000 frances. (Revue Universelle).

GERMANY.

(Cologue Gazette.)

Essen, Prussia, June 26, 1875.—Coal.—Here, the same as in France and Belgium, business is very quiet. The consumption of Coal by our Iron works has decreased very much. Official statistics of the Coal production of this district are published, according to which there were extracted 15 350,000 tons in 1873, by 80,000 miners employed. Last year 16,220,000 tons were produced, employing 74,000 miners. The decrease altogether falls into the current year, Rich Coal mines have been discovered in Dutch Limburg.

(Borsenhalle.)

Hamburg, June 26, 1875.—Metals.—The German (Cologne Gazette.

(Borsenhalle.)

Hamburgo, June 26, 1875.—Metals.—The German metal markets have been quier. Affairs in England are proceeding in a manner which causes consumers to hesitate ere they lay in supplies beyond the urgent requirements of their every-day dealings. In Tia the tendency is to favor purchasers. Banca is quoted lower, at 39 to 10. The German Lead markets have become as quiet as those of England and France. An arrival of 140.00 pounds Mexican has taken place here, which will be marketed without delay. We quote German, 23 75 to 24 marks; and English, 25-35 to 26. At Stettin, Spanish commands 25 to 27 marks; German, 24 to 25. Copper.—2 tocks have dwindled down to a mere trifle in this market, and transactions have been restricted thereby. We quote, without change, Drontheim, 94 marks; and Lake Superior, 100. At Stettin the range is 96 to 100 marks the 50 kilos. Speller.—A sale is reported here of 1000 cwts. on the spot, at 24-50 marks; the asking price is now 24-75. At Stettin the quotation is 24 to 25 marks. Godulla, at Breelan, has been paid 23-25, and on this basis large transactions seem to be going on in that city. Particulars not yet to hand.

(Koch & Vlierboo ROTTERDAM, June 29, 1875.— The The market is devoid of animation. Some lots of Banca have been done at 51.51% and 50% guilders. Tin deliverable from the July sale has changed hands at 51, and spot Billiton at 49%.

RUSSIA.

RUSSIA.

(Journal de St. Petersburg.)

St. Petersburg. June 13, 1875.—The extent of railroad lines in active operation during the months of January and February within the empire, according to the official returns for the two months. has been of 17,006 versts, an increase over December of 73 versts, the latter completing the line to Sevastopol. The gross receipts for the two months combined have been 21,40,528 roubles, against 21,488,532 during the corresponding period in 1874.

EAST INDIES.

shall have been declared we may confidently prices current, of same place and date, has the look forward to a considerable revival of trade.

again reach so high a figure as in 1872 and 1873. The price would, he believed, be very much influenced, as in 1872-73, by the price of iron. He had, he said, such an apprehension of a rise within a short period, that he was decining to within a short period, that he was declining to contract at the present price for more than the present year. Only last week he had refused to enter into a contract for 100,000 tons, extending over 1876, because of the apprehension he had that the price of coal would certainly rise if the iron trade revived. He lost over £50,000 by long contracts in 1872-73-74. He thought, he said, that gas companies' directors were the hardest and most uncompromising people he ne said, that gas companies' directors were the hardest and most uncompromising people he had to deal with! He really opined they "would take a penny out of a blindman's hat?" In 1872 he had a contract for 120,000 tons per annum for five years. It terminated then, otherwise he would have lost at least £100,000 by it. Mr. Palmer, M. P., thought coal would not rise for the next year or two, seeing that the price of iron is now falling, and stocks of it are everywhere accumulating.

THE BESSEMER STEAMER.

THE BESSEMER STEAMER.

The latest inventive effort of clever Mr. Henry

The latest inventive effort of clever Mr. Henry Bessemer would appear to have resulted in a practical failure. The Engineer says:

"There does not seem much chance st present of public anxiety with regard to the success or failure of this vessel, being set at rest, as she is now lying in the Millwall Docks, and likely to remain there for another two months at least, waiting her turn to go into Smith, Pender & Co.'s graving dock, in order to repair the damage done to some of her outside plates in her collision with Calais pier. It is probable that she will follow her rival, the Castalia, who is also awaiting her turn in the dry dock. In the meantime the currous have an opportunity of inspecting this extraordinary plee of naval architecture, as she is daily open to the public at the rate of 1/a head. We cannot help thinking that these two months might be more profitably employed in taking out the swinging saloon, which apparently will not swing, and decking her in. A weight of over 200 tons being thus removed, her designed draught might be obtained, and consequently greater speed and better steering. Although the saloon is so far a failure, the ship herself is admitted on all hands to be a success, as her low bows and large bilge keels give her comparative immunity from both disagreeable rolling and pitching, and if the saloon were removed she would be the quickest and most comfortable vessel on the Channel zervice."

THE SCOTCH IRON MARKET. The Scotch market hardened to a very appreciable extent last week, but it is, as yet, almost premature to infer that a really bona fide improvement in prices is being inaugurated. The shipments for the week certainly amount to a good total, and it is understood that there are now other considerable shipping commissions in the market for prompt execution. Merchants' stocks are small, and nearly 2000 tons have been abstracted from Connal's stores during the week, leaving about 34,900 tons there. Ballast pig iron remains at 537, along-side, and the principal freight rates are not different from those recently noted.

Messrs. Berger, Spence & Co.'s circular of to-day has the following remarks: "The turn in the Scotch market, characterized as a sput not many days since, is now generally allowed The Scotch market hardened to a very appre

in the Scotch market, characterized as a spurt not many days since, is now generally allowed to have far outran the term of ordinary spurts. The firmness of prices, if not yet wholly free from the suspicion cast upon it by small demand, is nevertheless thought much too striking to be left altogether unheeded, and the degree of attention it has already secured is perhaps best illustrated by the complete withdrawal of the reduction recently offered to forward purchasers. The more cautious sellers, whose number has received considerable additions of the reduction recently offered to norward purchasers. The more cautious sellers, whose number has received considerable additions within the last fortnight, prefer seeking safety in idleness, and gladly relinquish any but prompt business; this resolve, too wise not to be commended, is, however, perhaps just a little too late, as there cannot be any doubt that, somewhat earlier embraced, it would have rendered imporsible any, much more so early a recovery of Scotch iron. The change, however perplexing in appearance, is in reality but too account of Scotch iron. The change, however perplexing in appearance, is in reality but too accountable. Merchants have done selling, and must think of delivering, or in other words, it is now the makers' turn, and their attitude savors rather strongly of a determination to retrieve losses. The coincidence of a few good shipping orders may have contributed something to render the change rather more decided; its occurrence, however, owes nothing to any assistance from abroad, or to any new consumer's demand suddenly sprung up at home."

Messrs. James Watson & Co., writing from Glasgow on June 25, say: "We have to report a firm market for pig iron, warrants steady from 59/ to 59/6 cash, closing sellers at 59/6, buyers 59/3. Makers have in several instances advanced their quotations. Shipments last week were 11,118 tons, against 5475 tons in the

ivanced their quotations. Shipments last eek were 11,118 tons, against 5475 tons in the

corresponding	, ween	١.	•	,,		۰	, C	7 0	17	Ε,						
															No. 1.	No. 3.
G. M. B., at G	lasgow														. 61/6	607
Gartsherrie,	10															61/6
Coltness,	46															64/
Summerlee,	0-6														41.00 /40	.61/6
	6.9						ĺ.			ì	ì	Ì			. 66/	61/6
Carnoroe,	66														. 63/	61/6
Calder, at Port	Dunda	8										Ī	Ī		. 67/	61/6
Glengarnock, a	Ardro)6	56	18	III	ı.				Ī					. 67/6	61/6
Eginton,	8.0															58/6
Dalmellington.	5.6														. 60/	58/6
Shotts, at Leith																64/6
#F															4500 4	BEAT OF

Glasgow Brands.	urnaces wing, 11 urnaces Out 39.	out 39.	urnaces Built, 157.	Prices.		
	Fu B'v	Fu	Fu	No. 1.	No. 3.	No. 4
Gartsherrie	13	3	16	66/	61/	68/6
Coltness	12	0	12	68/	63/6	
Summerlee	6	12	8	65/	61/	62/
Langloan	7	1	8	66/	61/	63/
Govan	4 9	1	- 5	61/	60%	62/
Calder	2	6	8	*66/	62/	68/
Shotts Bess'mer Ordinary	5	2	7 }	82./6 66/	63/	69/
Carnbroe	4 2	2	6	62/6	60/6	64/
Wishaw	2	1	8		**	
Monkland	9	0	9	61/	59/6	60/
Clyde	6	0	6	61/6	59/6	60/
Quarter-Clyde	4	0	5	61/	59/6	60/

WEST COAST BRANDS-f. o. b. Ardrossan. 60/ 58/

Lochgelly.... Lamphinnans.... Bridgeness.... 59/

			Delive	rable alor	gside.
				No. 1.	
G. M. B., at (Hasgow			62/	60/6
Gartsherrie	91			68/	63/
Coltness,	6.6				65/
Summerlee,				00.00	62/
Langloan,	6.6			-0.00	62/
Carnbroe,					62/
Monkland					60/6
Clyde					62/
Goven, at Bre	nomiolaw				61/
Calder, at Po	rt Dundos			69/	62/
Glengarnock.	ot Ardro	GGGG		68/6	62/6
Eglinton,	ac Artiro	esau		62/	
Dalmellingto	n."			61/	60/
Carron of Cir	III.	63c mil	*******	61/	60/
Carron, at Gr	angemou	tn, ser	ected	70/	23.
Shotts, at Le	HIII			67/6	64/
Kinneil, at B	ness		******	63/	60/6
Bar Iron			Æ	8. 10/ to 3	£9. 10/
Nail Rods				9, 10/.	
	SI	HIPMEN	ITS.		
					Tone.
Week ending	June 26,	1875			13,101
3.6	June 27,	1874			6,415
Increase					6,686
Total increase	o for 1978				0,080

ITHE EBBW VALE COMPANY
Is another pertinent example of the uncertainties and perplexities which have attended iron working operations during the past year. The report of its directors for the year, ending March 27 last, is as follows: "The report of the directors of the Ebbw Vale Steel, Iron and Coal Company, Limited, for the year ended 27th March, has just been issued. The directors regret that it should be of so unsatisfactory a nature. They say: A limited period of unexampled and inflated prosperity in the iron and coal trades has been succeeded by a great collapse in prices and depression in those branches of industry. During the early part of the year the works were engaged on orders taken at prices much above rates then current, but in consequence of the great fall in the THE EBBW VALE COMPANY

taken at prices much above rates then current, but in consequence of the great fall in the market, and wages being excessively high, your directors were only enabled to pay a reduced interim dividend. Since September last, however, it has been impossible to obtain orders to keep the works fully employed except at prices considerably below the cost of production. The difficulties your directors had in dealing with the altered state of trade were increased and complicated by the conditions which had arisen between employers and employed; and when at the end of the year it became necessary to demand further reducemployed; and when at the end of the year it became necessary to demand further reductions in wages, employers of labor were met with an organized resistance which resulted in the stoppage of the colleries during a period of five months, and the consequent almost complete suspension of the iron works. At the commencement of the disastrous struggle which has just terminated, your directors decided to blow out all the company's furnaces, except three at Sirhowy. In doing so they adopted a policy which has been attended with the least loss. They were, however, enabled to keep the steel works in operation, thereby slightly reducing the great loss which has resulted through the stoppage of the works; and by thus providing employment for a number of the workpeole, the sufferings and privations of the district were somewhat alleviated. Notwithstanding the present depression of trade, your directors are still of opinion that the future and permanent prosperity of this great concern will be best promoted by continuing vigorously the various works of development and extension, to which reference was made in the last annual report. Under the became necessary to demand further reductinuing vigorously the various works of development and extension, to which reference was made in the last annual report. Under the direction and advice of Mr. Higson, the company's consulting mining engineer, the opening of levels and the sinking of two shafts at Ebbw Vale, of one at Abercarn, the erection of steam winding engines at Sirhowy, the opening of new workings, and introduction of underground engines where practicable so as

cordance with the suggestion which they felt, met with approval at the last annual meeting, have decided to raise £500,000 by debentures at

or steam winding engines at Sirhewy, the opening of new workings, and introduction of underground engines where practicable, so as to substitute steam-power for horses and manual labor, are being proceeded with, and will increase the output of coal at a reduced cost. The erection of coal washing apparatus at all the branches will lead to the utilization of small coal, greatly improve the quality of coke, and in addition will leave an increased quantity of steam coal available for sale. The extended use of steel rails is causing your directors to give due attention to the measures necessary for the completion and extension of the steel works. The crection of a brick making plant of the most improved construction is also in progress. As the cost on all these new works, extensions and improvements could not be met by an immediate and direct charge on revenue, and as it is deemed essential that they should be pushed on to completion as rapidly as possible, your directors, after much consideration, and in accordance with approval at the last annual meeting.

Messrs. John E. Swan & Bros. (limited),

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., and Red Bay Railway to the Mount Cashel mines, in which your company is interested, has been comp'eted, and ore is now being taken by railway from the workings to the shipping port. The stocks on hand have been estimated on the present low rates, and in consequence the sum of £23,196, 10/10 has been written off cost prices. Your directors 'saving carefully considered the sundry doubtful debts and securities, have reduced the amount at which they stood in the last balance sheet from £21,539. 8/1 to £15,000, and have debited the difference to profit and logs account. Of this £15,000 the

EAST COAST BRANDS-f. o. b. in the Forth

I find the following in the columns of the Birmiugham Post:

"Surgestions not before published are made by Mr. F. W. Gerhard, metailurgical chemist, of Coseley, South Staffordshire, who communicates them in the shape of proposals for a patent for improvements in the manufacture of a ferro-manganese comound, and its use in the production and purifying of iron and steel. Mr. Gerhard sets forth the properties of the compound as here: "1. If the ferro-manganese compound is added to cinder pig iron it would improve its value to the extent of from 10/ to 20/ per fon. A large cupula furnace and a Root's blower would melt 20 tons a day. 2. The compound could be added to Cleveland pig iron in a puddling furnace, to make wrought iron equal in quality to the South Staffordshire iron. 3. Tap cinder can be purchased at 1/ per ton. The last experiment I made with it I obtained 52 per cent. of cast iron. This could be mixed with the compound, which would leave a larger profit than the above. 4. The compound could be employed for the production of malleable iron, the market value of which at present is £10 per ton. By manufacturing it from the compound it would leave a profit of more than £5 per ton, or £100 on 20 tons. 5. This is not all. Steel could be produced by using the ferro-manganese for half the cost of Bessemer steel. Articles could be made into steel instead of wrought iron by annealing—such as horse shoes, nails, bridle bits, stirrup irons, &c. I believe that the present process of annealing iron can be greatly improved and tits expense considerably lessened. It requires at present from six to eight days. The articles to be annealed are placed in costly iron vessels, or pots, and, surrounded with hematite ore, are gradually heated. I tried a few experiments a short time since with some small articles, and succeeded in annealing, or decarburizing, them in from eight to ten hours. Furnaces constructed of fire-brokes could be subexperiments a short time since with some small articles, and succeeded in annealing, or decarburizing, them in from eight to ten hours. Furnaces constructed of fire-bricks could be substituted for the iron vessels, and much larger articles could be converted into iron and steel by this process, at a far less expense, than can be done by having recourse to the making of iron by puddlers. 6. The above mode of manufacturing iron and steel could be greatly economized where the gases are utilized which are produced from blast furnaces. After the gases have heated the steam boilers, on the space between the boilers and the chimneys, two ferrotween the boilers and the chimneys, two ferro-manganese compound ovens or sheds could be erected, and the gases arranged to heat them alternately. When the compound is properly prepared it requires but a short period to con-vert it into iron when placed in the blast fur-

The further failures of last week have occasioned some uneasiness here in the steel trade, there being a considerable business, in the regular course of things, between all the principal cotton spinners and the Sheffield producers of steel spincles, &c. It is stated that a few local manufacturers are creditors of some of the houses which have just collapsed, but I believe the emounts in ouestion are not very learn. houses which have just collapsed, but I believe the amounts in question are not very large. The dauger, in fact, hardly lies in that direc-tion. It is the indirect results of these com-mercial disasters which are most widespread and insidous in their effects. There is everywhere a disposition to be unduly careful in all kinds of transactions, and even the very highest class of bills is now looked upon with suspicion. The banks are full to repletion, yet money is prace. a disposition to be underly care in managed transactions, and even the very highest class of bills is now looked upon with suspicion. The banks are full to repletion, yet money is practically tight, the bankers being exceedingly cautious, even with their usual customers. This tightening of the purse strings is very well in its way, and admirable from one point of view, but it is apt to precipitate the failures of those who might, with a little lemency, have pulled through. Such, doubtless, will be the further effect of the existing state of things, and I shall not be surprised to find that the 26th or 29th of the current month will bring down a few more unstable concerns. Locally, I believe, we are gradually settling down on a safer and more substantial basis. A few firms that worked on what has proved to be a "sophisticated" footing have gone to the wall, leaving the kalance of those in the same branches of trade better able to compete for such orders as are from time to time in the market. At the same time the continental and American competition in the Bessemer and steel rail departments is very keen, and is tending to the serious curtailment of the operations of English producers. The chief source of this successful competition is believed to be the longer hours of working time, and it is felt that some steps will shortly thave to be taken here in order to lessen the dis advantages of the home manufacturers. I shall not, therefore, be surprised to learn that an organized attempt will presently be made to upset the results of the nine hours movement, not only in the mechanical shops and engineering telepartments, but in the collieries of this and other districts. Many circumstances and facts lead to this conclusion, the only matter only in the mechanical shops and engineering departments, but in the collieries of this and to upon. Of this amount it is intended that £250,60 obtail be appropriated to suspense outlay ac60 obtail be appropriated to suspense outlay ac61 occupit to pay for new works—completed, in progress and contemplated; the remaining £250,000 obtail be applied to the repayment, as they fall due, of the two existing mortgages of £150,000 and £100,000 respectively. This debenture loan of £500,000 will then constitute a first charge upon the company's property. As it was not desired to take up this money except as needed, if was not considered requisite publicly to invite applications for the debentures; and age so much of the security is freehold and otherwise ample, your directors have had no difficulty in obtaining all they required without incurring brokerage or other expenses. Since the last annual meeting two of your directors visited the Spanish mines, and after obtaining a professional opinion confirmatory of their own views as to the working of them not proving a commercial success, and, moreover, having regard to the unsettled state of the country, it has been unanimously decided that it would be to the interests of the company to terminate the lease, which has accordingly been done. The sum of £6191. 8/, being the amount of expenditure incurred in connection with these mines, has been charged against revenue. Acting under advice, your directors have also considered it desirable to suspend for the present the sinking of the pit in the Forest of Dean. The branch line from the Ballymena, Cushendall and Red Bay Railway to the Mount Cashel mines, in which your company is interested, has been completed, in professional and one is now being taken by rail-

between this and Manchester.

The steel manufacturers are considerably interested in the settlement of the tariff question at New York, as between importers and the government of the United States. The correspondent of the Sheffield Telgraph, in communicating in advance the decision of the General Appraiser, says that the finding is to the following effect: "That all bur steel imported, having 10 per cent. or less of 'great' or 'small' sizes, will be charged at the ordinary rate of duty applicable to all bar stel. When the exceptional sizes exceed 10 per cert. of the invoice, they will be charged according to the tariff rates."

prices. Your directors raving carefully considered the sundry doubtful debts and securities, have reduced the amount at which they atood in the last balance sheet from £21,539. 8/1 to £15,000, and have debited the difference to profit and logs account. Of this £15,000 the sum of £1701, 5/6 has been received during the past year, reducing this asset to £13,208, 13/6. At Boston it appears matters are conducted in a more amicable manner. The cast steel trade to profit and loss account, to cover bad debts incurred during the year. The outlay on new

It is anticipated that the Factory Acts Com-missioners will visit and hold sittings at Shef-field about the middle of July. They will pre-viously have been to Birmingham, Leicester, Nottingham, Manchester, and other large Lan-ceshirs town.

ashire towns. Lord Fitzwilliam has closed his Low Stubbin collery, owing to the strike of the miners against the use of safety lamps without additional wages. At the Morewood's collieries, near Alfreton, the miners have received notices of a reduction of 3d. per ton in the wages of coal getters, and of 6d. per ton on "yard-age."

coal getters, and of 6d. per ton on "yardage."

The report of the directors of William Corbitt & Company, Limited, Masborough Iron and Stove Grate Works, near Rotherham, recommends a dividend of 10 per cent. for the past year, the works being in full operation. Pigiron and merchant iron values are not materially altered from those of last week, there being still a fairly good inquiry for ship and boiler plates, as well as hoops. Fuel does not cheapen very rapidly, coke especially being tardy in reaching lower figures. Some new gas and steam coal contracts are being made the subject of negotiation, but I hear that the colliery owners manifest a decided reluctance to binding themselves down for any long period.

In cutlery a little more is being done, as also in files. I notice that one or two of the cutlery and file manufacturers rank as creditors in the failure of Messers. Robert Benson & Co. The amounts they claim are, however, not very

failure of Messrs. Robert Benson & Co. The amounts they claim are, however, not very large, comparatively speaking. Some of the factors doing business with the States report themselves to be fairly well supplied with orders for good table, pen and miscellaneous special goods. Others state that their commissions are almost wholly limited to best cutlery. Canada and British North America, generally, are buyers, but I do not learn that their requirements are at present of a pressing nature. The West Indies, Peru and the South American markets are not ordering at all freely.

THE MEDALLIC ART

is of great interest as an important department of numismatics, and I, therefore, quote the subjoined passages from the fifth annual report of the Deputy Master of the Mint. He says: "Metals do not appear in any European country before the 15th century, with the exception of the gold medals of David II., issued in Scotland between 1330 and 1370. In 1439 mention is made of a gold medal of the Council of Florence, and from that time the art began to flourish in Italy. The medals were at that time modelled in wax and cast in fine sand, and generally finished with the graving tool. An excellens example by Albrecht Durer, bearing date 1508, is among the autotypes, but the most beautiful series is that of the Papal medals, beginning with the pontificate of Paul II. (1464); many of these were designed by Raffaelle, Gluilo, Romano, Francia and Cellini. Next to Italy, France was in the early days of the art Glulio, Romano, Francia and Cellini. Next to Italy, France was in the early days of the art most remarkable for medals, but no very fine specimens were produced there before the reign of Louis XIV. The oldest known English medal was struck in 1480, and is the work of an Italian artist; but very few others are met with until the reign of Mary. One of this queen herself by Trezzo is given in autotype in the report. Many medals date from Elizabeth, the most renarkable one being that commemorate. report. Many medals date from Elizabeth, the most remarkable one being that commemorating the defeat of the Spanish Armada, which bore the device of a fleet scattered by the winds, with the legend "Afflavit Deus et dissipati sunt;" no specimen is, however, known to be in existence. The artistic tastes of Charles I., and the works executed for the Commonwealth by the great medallist, Thomas Simon, caused rapid advances in the English art during the 17th century. The victories of Mariborough were celebrated by some admirable medals. Since then the style has tended toward a revival of Roman types, a recent instance being vival of Roman types, a recent instance being vival of Roman types, a recent instance being the Crimean war medal, the reverse of which represents Victory crowning a warrior equipped in Roman armor. The Napoleonic medals are pseudo classic in design, but generally credit-able to French art."

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

Now that a reduction of three shillings or so per ton has been declared in the price of Cannock Chase coals, it is believed that the South Staffordshire mine owners must follow within the next few days—in which eventuality it is considered likely that a drop of 10/, or from that to £1, would be aunounced in finished iron. In consequence of this expectation business is now at a minimum, there being literally no sales of any moment. A number of well-informed iron masters, nevertheless, affirm that no drop in prices will be declared at the quarterly meetings next week, but they do not possess charmed voices, and their tones are not sufficiently dulcet to persuade reluctant would-be buyers that they speak that which must prove to be true of necessity. Quoiations are, in consequence, precisely the same as heretofore. The various hardware trades are quiet, but they are, on the whole, very steadily engaged, a remark which applies to the whole of the Black country towns as well as to Birmingham. The Japan market is again productive of orders, particularly for ammunition and guns. Buyers from Canada are in Birmingham placing orders for fancy goods, but it does not appear that the Dominion is purchasing ordinary hardwares from us to other than a limited extent. Now that a reduction of three shillings or so

chasing ordinary hardwares from us to other than a limited extent.

SOUTH WALES.

One or two firms in the principelity are spoken of as being in a somewhar critical condition financially, partly as a result or condition financially, partly as a result of form or condition financially, partly as a result or condition financially, partly as a result of financially, partly as a result of condition financially as a result of condition financially, partly as a result of c

£90. Tin Plates continue dull, with a drooping

200. Tin Plates continue dull, with a drooping tendency. Lead has again slightly declined; good soft English pig, £22 to £22. 5/. Spelter, —Common Silesian remains offered at £24; special brands, in outports, from 5/to 10/extro. Quicksilver has declined to £11 per bottle." Messrs. Berger, Spence & Co. remark: "In Copper nothing of any importance has been done, and quotations are again lower. Tin continues duil, and prices receding. Lead has been offered at a reduction upon previous rates, with no better result than a few small sales.

tinues duil, and prices receding. Lead has been offered at a reduction upon previous rates, with no better result than a few small sales. In Spetter no transaction has been reported."

The Mining Journal says: "Copper.—There has been hardly anything doing throughout the week. The market has been very quiet, and prices have been almost nominal. The want of confidence, which is everywhere complained of, is felt very strongly with regard to Copper, and notwithstanding the statistical position which this metal occupies, and which is undeniably good, there is an utter lack of vitality in the market. Chili bars are quoted £81. 10/ to £82. Lead.—There has not been much doing in this metal. Good soft English pig lead is quoted £22. 6/; soft Spanish, without silver, £21. 10/ Spetter.—Ordmary Silesian has realized, on the spot, £23. 17/6, and special brands at outports, £24. English hard has changed hands at £18. 5/. Tin is quiet, and Straits rules at £83 to £83. 10/. English ingots are quoted £90. Tin Plates.—The market is without animation, and buyers would have to be content with some important concessions upon current quotations. Quicksider is now quoted £11 per flask."

The Liverpool metal market is also dull and weaker in price.

The Business Outlook-Failures for First Six Months of 1875.

OFFICE OF THE MERCANTILE AGENCY, DUNN, BARLOW & Co., July 15, 1875.

We present herewith very complete returns of the number of failures which have occurred throughout the United States in the first two quarters of the present year, together with the

	ist	Months.	24 3	Months.	Tot.	for 6 Mos.
STATES.	Number of Failures.	Amount of Liabilities.	Number of Fallures.	Amount of Liabilities.	Number of Failures.	Amount of Liabidties.
Ala. Ark Ark Colorado Colorado Del. Del. Del. Georgia Idaho. Ilinois Ilndiana. Io wa Ky. La. Maine Mino Mino Mino Mino Mino No New York N. J. New York N. Y. City	15 2 61 41 5 5 5 4 44 40 96 84 419 38 61 68 17 65 61 112 157 197	\$966,000 27,000 65,971 297,761 55,000 29,834 100,000 1,067,300 1,961,266 1,961,266 1,961,405 1,961,405 1,961,400 1,961,	55. 15 56 9 9 4 4 7 7 39 39 39 4 8 8 55 5 10 0 60 21 1264 41 1 1 1 2 1 4 0 6 8 5 15 131 139 139	\$1.57,0.00 184,500 184,500 265,102 60,628 60,628 75,400 1,918,915 1,918,916 1,918,918,916 1,918,918 1,918,918	20 17 116 84 80 14 9 11 17 78 12 37 78 16 60 68 87 77 84 16 16 37 16 16 26 37 16 16 26 37 37 37 38 37 37 38 37 38 38 38 38 38 38 38 38 38 38 38 38 38	\$528,000 211,500 285,5102 285,5102 286,5102 286,500 38,100 2,986,010 3,888,282 418,000 2,466,010 4,660,000 4,660,000 2,466,010 4,660,000 2,476,010 2,488,500 2,488,500 2,416,010
N. Y. Chy N. C Ohio Oregon Pa R. I S. C Tennessee Texas Vermont Va. & W.	155 78 155 21 61 23 67	1,187,156 4,927,608 476,394 989,236 148,765 660,100 31,300	9 87 129 29 50 29 47 26	140,400 1,407,795 202,548 3,815,859 806,300 1,078,336 181,402 403,200 243,000	25 160 18 284 48 111 54 114 88	14,762,500 263,400 2,894,950 302,948 8,743,445 779,594 2,042,572 325,167 1,153,300 274,200
	79.5	419,384	56 37	333,335	94	752,719

Accurate comparison of the above figures for the same six months in previous years is impos sible, owing to the absence of previous quarterly and half-yearly returns, but dividing by one-half the number of failures for the entire twelve months of previous years, the following will show a comparison sufficiently near the mark for all practical purposes :

Total Fail- One-half Total Liabili-One-half of ties for year. \$121,056,000 228,499,000 155,239,000 First 6 mos. same. \$60,528,000 114,248,000 77,619,000 74,940,869

While the above comparison shows a very rifling increase in the number of failures, it will be seen that the amount of liabilities is con-iderably less than the average of the four

The expectations which were indulged in at the early part of the year, that the business of the country would revive, have not been fulfilled. Compared with this time 12 months ago there is but little if any improvement perceptible, either in the volume or profitableness of trade. The effects of the panic, or rather of the excesses in business which caused it, have lasted longer than was anticipated men-The expectations which were indulged in at

While this may be subject for congratulation While this may be subject for congratulation, there is cause for apprehension that all these months are going by, not only with no money being made therein, but it is feared that the profits of the limited trade done are insufficient to meet the expenses incurred. Judged by the standard of a previous generation, or by the figures that prevail in other countries, the expenses of business and the cost of living, even in the best of times, have been excessive; and, as is always the case with extravagant habits, it has been found most difficult to reduce this class of expenditure in the same ratio that trade has declined. The expectation of improved business, which each successive season has held out, has had its influence in retarding retrenchment in this respect, which now, how-

has held out, has had its influence in retarding retrenchment in this respect, which now, however, cannot be longer with safety delayed.

The general result of business since the panic has, therefore, been to reduce rather than augment the capital employed, especially so if a rigid valuation of assets at the present realizable prices is made. Prices that now prevail for the product of almost all classes of industries have steadily declined, while the extent of the production in many leading lines, though largely reduced, keeps in advance of the demand, notwithstanding the concession in values. In this respect, as, indeed, in many other adverse circumstances from which we are now suffering, other countries are passing other adverse circumstances from which we are now suffering, other countries are passing through a similar experience. Over production is the feature of the hour all over the world, and depression in trade, lack of profit and want of confidence are by no means confined to the United States. While but little comfort can be derived from the condition of things abroad, there is some satisfaction in knowing that coun-tries unplessed with paper money, an excessive tries unblessed with paper money, an excessive tariff and ecormous railroad expansion, are showing even more marked signs of distress than have been evinced here. We are enabled than have been evinced here. We are enabled to state, from figures in our possession, that the liabilities of parties who have failed in London, Leeds and Manchester, England, alone, within the last interly days, foot up the enormous amount of over £21,000,000, or over \$100,000,000, being 25 per cent. greater than the liabilities of all the failures that have occurred in the entire United States for the first six months in the year. Nearethy, in Canada, the failures in the year. Nearer by, in Canada, the failures have been especially numerous, amounting in number to over eight hundred, and in liabilinumber to over eight hundred, and in liabili-ties to over twelve millions of dollars. This, as will be seen by comparison with the above figures, far exceeds the disasters in any State in the Union of similar size. The reports from all the chief centers of trace indicate much that is eucouraging. Whatever an abundant agricultural product will accomplish toward a restoration of presentit will exceeding

indicate much that is encouraging. Whatever an abundant agricultural product will accomplish toward a restoration of prosperity will certainly this year be contributed. The purchasing and debt-paying power of the people in vast sections of the country will be improved, while considerable activity must be provoked during the autumn in replenishing the small stocks of merchandisc held in all hands. Other things than agricultural success may be needed to restore universal prosperity. Expectation founded on that basis has already led to disappointment. But, whatever clee may be needed, it seems hardly possible in the nature of things that a revival can be very much longer delayed. Every day must bring us nearer to the commencement of a better state of things. We have all the elements of wealth at hand, abundant and varied resources, unrivaled means of transportation, a large surplus of unemployed capital, a well tried and successful monetary system, and, above all, a people who have experienced a far worse condition of things and yet have achieved success. It may be that the One Hundredth Anniversary of the hation will both come and go before we can chronicle permanent activity and profit in business; but if no worse comes to us versary of the nation will both come and go before we can chronicle permanent activity and profit in business; but if no worse comes to us in the interval than has befallen us in the six months under review, there will be cause for congratulation. The great lessons of patience and economy, and the practice of such business principles us will equally apply to a poor as principles as will equally apply to a poor as well as a prosperous condition of trade, will at least not have been taught in vain.

Lightning and Lightning Conductors.

The number and intensity of the thunde storms which have raged over this country during the past season, as well as the acci dents which have accompanied them, have been so far above the average that they have attracted universal attention to lightning, and the means at our disposal to protect ourselves, our buildings and our apparatus from the de structive effects of electrical discharge. This. therefore, forms a most interesting subject for discussion before this society. Recently the partial destruction of that magnificent building. the Escurial, one of the chief glories of Spain, and called the eighth wonder of the world, has added considerably to the interest felt in the

lasted longer than was anticipated imme. tabulated they would probably cast into the diately after that climax had been reached, and shade the massacre committed by even our railway trains. The average number of deaths due to lightning in England, previous to this year, was 18; in France it was 95.

Mr. Symons, the well known meteorologist who has for many years devoted much attention to this subject, mentions that in two storms in June last nearly 200 separate accidents came under his own knowledge, including the death of 10 persons and injury to 33 others; upward of 60 houses were struck, 10 or 15 of which were burned down; 28 horses and cattle and 99 sheep were killed. This is the imperfect record of only two storms. What must it be for the whole year?

But it is the damage done to our telegraphic system that more immediately interests this society. I am able to give fairly complete returns of the injury inflicted on the apparatus and plant of the postal telegraph department, and I am in hopes that the discussion which this paper is intended to inaugurate will elicit much important information of the damage done to our extensive railway telegraph system The returns have been tabulated and will accompany this paper as an appendix.

From January 1st to July 31st, 1872, of 9475 instruments of different form in use in the department, 897 or 9:46 per cent, were injured. The different classes and number of apparatus used, and the amount of injury received by each, were as follows:

*From a paper read before the Society of Telegraph Engineers England, by W. H. Preece.
† The Escurial, since its completion in 1584, has been on fire no less than seven times, viz., in 1887, 1590, 1671, 1744, 1766, 1826 and 1872. The causes of two of these are unknown; but at least four of the fires arose from the lightning, yet there never has been one lightning rod introduced into the Palace.

Instrument.	Number in use.	Number damaged.	Per cent.
Automatic Hughes'	108	Nil.	
Morse Recorder	1943	37) 7	3.24
single needle	3536	364	10.29
Double needle	77	28	3.0
Alphabetical Bells' (Bright's)	8303 485	874 92 72	11.33
Protectors		72	
Total	9475	897	9.46

The actual or direct estimated cost of these njuries is £905, that is, £905 is the direct claim of the postal telegraph department against Jupiter tonans; but it by no means represents the indirect claims of the department against that potentate. Thus it is impossible to estimate the loss of time on the part of the staff engaged in maintenance duties in visiting and revisiting stations damaged by lightning, or the effect of the delay in repairing the circuit upon the revenue, and the consequent detriment to the business. The total cost must be very large. If the damage inflicted upon our railway te graphs and the delay to the traffic caused thereby were also estimated, it would be seen that our direct and indirect claims against Jove would bear a comparison with the historical Alabama claims.

I.—ATMOSPHERIC ELECTRICITY.

I do not propose in this paper to discuss the ause or nature of atmospheric electricity. It is sufficient for our purpose to admit the existence upon the surface of our earth and in our atmosphere of that great form of energy called electricity. To study the effects of heat it is not necessary to discuss its nature, and the great laws of gravity have been determined without reference to the inscrutable mystery of its causation. I, however, do not hesitate to assert it, not only as an opinion, but as a fact well substantiated by experience and by reasoning, fathered by the greatest lights of our science and taught by our leading philosphers, that electricity is no more matter than is heat, or light, or sound. Modern physicists know no such thing as the so-called electric fluid, as a fluid; that is, electricity does not exist as a mass occupying space, and moving from point to point in such a way as to justify the assertion so often made that "it enters here and makes its exit there." It is one form of energy, and therefore, necessarily force and not matter. displaying its effects in various useful, beautiful, and terrible ways. While the early theorists have imparted into our language terms based upon the hypothesis of a fluid-notably 'current"-there is no objection to the continuance of these terms provided they do not convey to the mind erroneous ideas as to the nature of the force whose effects they symbolze. A current of electricity is a clear, well defined term, raising in the mind at once an idea of its character; but it by no means implies the transference of matter from one point to another.

Thunder storms are but gigantic repetitions of simple experiments. They are but elementary electrical phenomena, differing only in degree from those which cause the ordinary snapping spark from the machine, or the leud report from the Leyden jar. Electrical discharge, whether indicated by a current, by the brush, by a star or glow, or by a spark, depends simply upon the existence of two points at different potentisls, separated in the first case by a conductor, in the latter cases by a non-conductor. In the case of the conductor, we have the ordinary electric current, and in the case of the non-conductor, when the difference of potential is high enough, we have the disruptive discharge, accompanied with its usual explosive and luminous results. In any case of electrical discharge, either that indicated by a spark from a lump of sugar, by the disruptive discharge of a Leyden jar, or by a flash of lightning, there must be two conducting masses in opposite electrical states, separated by a non-conductor, or dielectric.

These masses may be two thunder clouds, or the earth and a thunder cloud, oppositely electrified, separated by the air, forming the simple conditions of an ordinary condenser.

The discharge, whether from a Leyden's tery or from heaven's artillery path. The light we see is the effect of the discharge. It is indeed, as its color and as the and nothing more. When lightning is seen the danger is past. Persons who have been killed flash. by lightning can have seen nothing of it. Their death must have been instantaneous. The placid state of their features is an indication of its painlessness. Persons who have been struck have stated that they have seen nothing and only felt a blow.*

The magnitude of the discharge depends pon the quantity of electricity present, and the distance through which it occurs. The path is prepared beforehand by induction. The particles of air or other matter in its path are raised to such a high state of polarization, that they are in a state of "tottering equilibrium," and the slightest acquisition of potential or diminution of resistance. either by approach of the conductor or increase of quantity, destroys this condition, and we have discharge with all the effects of light, heat and mechanical energy. A ship sailing calmly over the ocean, a moving railway train, a horseman galloping home for shelter from the approaching storm, may prove the last straw to break this camel's back

The air which we breathe is invariably found

*Tyndall says: "The nervous system requires a certain interval of time to become conscious of pain. The time of an electric discharge is but a small fraction of this interval; hence, as a sentient apparatus, the nervous system is destroyed before consciouscess can set in. If this be true, and there are the strongest grounds for believing it to be true, death from lightning must be painless." (Notes, p. 16.)

all over the surface of the earth to be in a state of electrification. It is usually positive in fair weather, except a thin stratum in contact with the earth. Its potential increases as we ascend; but even at the same place, its potential and character vary at times, particularly when thunder is heard in the distance.

It is usually assumed that the great masses of clouds, called thunder clouds, are themselves the generators or sources of these great charges of electricity which result in thunder and lightning. It is, however, very doubtful whether this be so; but it is more probable that the clouds merely act the part of the coatings of a Leyden jar to accumulate and concenrate the charge in points. Clouds have even been known to be absent when a discharge of lightning has been evident; and discharges have frequently been observed to be repeated from the same cloud. Moreover, a very simple and well-known experiment shows that the charge of a Leyden jar exists, not in its coating, but in the dielectric which separates its coatings In the same way a charge which terminates in a thunder clap exists in the air, and not in the cloud.

There is a beautiful experiment of Franklin's which illustrates the accumulative action of a cloud moving through polarized air.

- 1. Apply a charge to A and draw it gently to The charge will be found distributed.
- 2. Reverse the motion, the charge will again ccumulate on A.
- 3. Charge the entire surface by a removable oating, then draw A gently to A1-discharge will take place two or three times during its motion.

A represents the cloud, B the earth, and C the air.

Thus a moving cloud may merely act the part of a carrier or secumulator of the charge which exists in the air.

Lightning is usually classified into sheet, forked and ball lightning. Sheet lightning is merely the reflection of forked lightning or the electric discharge which bas occurred somewhere out of the field of view. Forked called also zig-zag or chain lightning, is the light produced by the disruptive discharge between cloud and cloud, or between cloud and earth. Ball lightning is of a very different character. Many of the so-called "balls" are undoubtedly, optical illusions, and Faraday himself stated that they were incompatible with what we know of electric discharge. "There may be balls of fire," said he, "but they are not electrical." Yet the evidence of balls of blue fire rolling along the surface of the sea, and suddenly terminating in terrible electric discharges over ships; masses of fire rolling along the ground toward buildings, ending in fatal discharge, and many other cases, leave it unquestionable that some such phenomenon as globular or ball lightning exists. Some have explained them to be balls of incandescent gas, rendered so by the discharge; but Mr. Cromwell Varley has recently offered a more acceptable explanation. According to him, ball lightning is a luminous spot on the earth, terminating a current or brush discharge from a negatively charged cloud. This spot moves with the cloud. Illuminated lines of force are projected from some point in the cloud upon the earth. He has been very successful in repeating the effect experimentally, and he suggests this fact as an explanation of the photographic images imprinted on the skin of persons struck by lightning.*

I quote from memory: "When, after a serene sky, thunder clouds form in the distance, the observer sees the clouds and the illumination of the lightning displayed before him as a magnificent picture; and what he often takes to be forked lightning (i. e. the actual flash, and not the reflection of it) appears to run through the clouds in the most beautiful man-ner." "That which is thought to be the electric discharge is only the illuminated edge of a cloud, beyond and behind which the real discharge occurs. It is in its nature like the bright enlightened edge which a dark well defined cloud often presents when between the sun and the observer, and even the moon also frequently produces similar appearances. In the case of its production by lightning and distant clouds the line is so bright by comparison with the previous state of the clouds and instantaneous and continuous along its whole sky, so sudden and brief in its existence, so perfectly defined, and of such a form as to lead every one at the first moment to think it is spectroscope has shown us, simply incandescent the lightning itself which appears." * * * matter. It indicates the path of the discharge Hence many of the errors made as to the character, shape and condition of the lightning

> The discharge of a Leyden jar, of an induc tion coil, or that which is succeeded by lightning and thunder, invariably occurs along the line of least resistance. It has been found, in every accident which has been investigated, to follow the ordinary laws of the transmission of electricity, laws which are simple and thoroughly well known. This line of least resistance may be made up of metals, of bricks and mortar, of trees, or of animal flesh. Whatever, in fact, offers the least resistance will be the chosen path. It need not, necessarily, be a single track, for both in experiment with machines and with induction coils, as well as in the observation of the great experiments of nature, it is frequently found that the path is bifurcated, and often divided into three or even into four lines. Thus the electric discharge in the air is a simple case of the electric discharge between two electrified conductors which have acquired such a difference of potential as to break through the resistance of the dielectric which separates them, violently displacing its particles, and completely altering its physical features.
>
> There is nothing hidden, mysterious, or unknown in the laws of atmospheric electricity. They are simple cases of the ordinary well known laws which are as "familiar in our mouths as household words." of nature, it is frequently found that the path

(To be continued.)

* C. F. Varley, Trans. Royal Society, January. . + Faraday, vol. il., p. 277.





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MILLERS FALLS CO.—Enclosed find draft for amount of invoice, January 7 would have sent the amount before, but did not have an opportunity of trying the Iron Cutter until a few days ago. It is one of the best machines were saw.

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Moore & Co.

Yours, truly,

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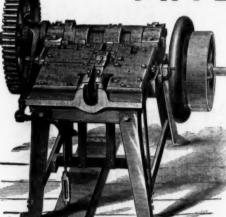


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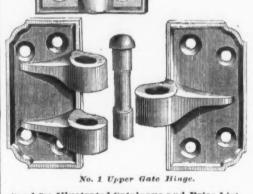
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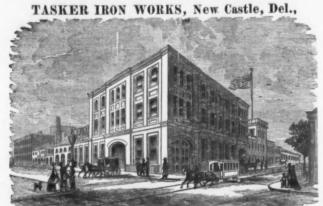
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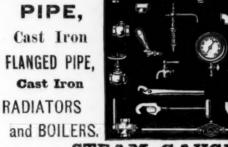
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Waish, Guiter & Flazier, 18 Chambers, N. Y.

Wilson J. Clark & Co., 21 Beekman, N. Y.

Wallson J. Clark & Co., 21 Beekman, N. Y.

Hallows J. Clark & Co., 21 Beekman, N. Y.

Bloor J. Clark & Co., 21 Beekman, N. Y.

Field Alfred & Co., 62 Chambers, N. Y.

Van Wart & McCoy, 134 and 136 Duane, N. Y.

Van Wart & McCoy, 134 and 136 Duane, N. Y.

Windmuller Louis & Roelker 20 Reade N. Y.

Hardware Manufacturers,

American Spiral Spring Batt Co., 82 Beekman, N.

Van Wart & McCoy, 194 and 198 Duane, N, Y
Turnor R. A., 28 Chambers, N, Y
Windmuller Louis & Roelker 20 Reade N, Y
Windmuller Louis & Roelker 20 Reade N, Y
Windmuller Louis & Roelker 20 Reade N, Y
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American Spiral Spring Butt Co., 82 Beekman, N, Y,
burasol Hardware Co., Buffalo, N, Y
Enterprise Mfg, Co., Phila
Hart, Bilven & Mead Mfg, Co., 243 Pearl N, Y
Midler's Falls Mfg, Co., 78 Beekman, N, Y
Pratt & Co., Buffalo, N, Y
Providence Tool Co., Providence, R. I.
Schweltzer Mfg, Co., 57 Reade, N, Y
The Hull & Beiden Co., Danbury, Conn.
Phelan Edward, 113 Chambers, N, Y
Union Mfg, Co., 96 Chambers, N, Y
Union Mfg, Co., 96 Chambers, N, Y
Williams, R. Co., 96 Chambers, N, Y
Williams, R. Co., 96 Churchill, 28 Warren, N, Y
Williams, M. Co., Wourchill, 28 Warren, N, Y
Williams, M. Co., 96 Churchill, 28 Warren, N, Y
Hardware Special Hea.
Wington & Northun Rochelle, His.

Williams, White & Churchill, 25 Warren, N. Y. Wilson Mg, Co., 26 Chambers, N. Y. Hardware Specialities, Evington & Northup Rochelle, Ills., Eagle Mg, Co., Newark, N. J., and & Duane, N. Y. Fost, C., Barington, Vt., Sheparu Sidney & Co., Buffulo, N. Y. Hoese, Maker of, Itogers H. G., Jordan, N. Y. Hicks O. B. & Co., Battimore, Md. Hoisting Engines, Makers of, Crane Bros. Mg, Co., Chicago, Ill. Y. Hicks O. B. & Co., Chicago, Ill. Y. Horse Hay Forks and Flattures, Makers of, Nellis A. J. & Co., Pittsburgh, Fz., Horse Hay Forks and Flattures, Makers of, Nellis A. J. & Co., Pittsburgh, Fz., Horse Nails, Makers of, Co., St. Chambers, N. Y. Brundage & Co., Middletown, N. Y. Globe Nail Co., Boton, Mass. P. att & Co., Buffalo, N. Y. Futnam S. & & Co., Neponset, Mass. Horse Shoes, Makers of, Patta & Co., Buffalo, N. Y. Ender Miss. S. & Co., Neponset, Mass. Horse Shoes, Makers of, Co., Brother, P. St., Duils, Dudgeon Richard, 24 Columbia, N. Y. Economic Birge & Co., Frovitience, B. I., Sem Die, Birge & C., Futsburch, Fs. Sem Die, Birge & Co., Hidden, N. Y. Lee Faels., Carter W. H., 100 Chambers, N. Y.

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Fuller, Dans & Fitz, 110 A. Boston.

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Holden, Hopkins & Stokes, 191 John, N. Y.

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Ozaen Wallace, 85, 19 and 91 Elim, N. Y.

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Van Wart & McCoy, 134 and 136 Duane, N. Y.
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Patterson's Patent Cement Can Top.

This new style of top is expressly designed to effect a saving in the manufacture of cans in which the top is sealed by pouring cement into a groove in the top of the can. Heretofore it has been necessary to make the cap from a separate piece of metal, while the center of the rim has been practically thrown away. the price received for them being very small. By the new invention the cap is made of the waste piece of tin that comes cut of the hole in the rim, thus effecting an enormous saving.

The blank is first cut and drawn into a shape like a low, flat straw hat. It is then cut apart half way up the cylindrical part, and the rim formed to the proper shape. What would represent the crown of the hat forms the cap, a small flange being left upon it in cutting apart. The inside diameter of the outer rim of the can top is 4½ inches. The cap is 39-16th inches. A 10x14 sheet of coke tin will make 4 tops and 4 caps and 2 bottoms. In a thousand gross there is a saving of no less than 71 boxes of 12x12 tin, which at ordinary prices now ruling is about \$710.

Any description of metal can be used for the new pattern of tops and rims, from the fact that, in drawing into shape, the metal is not stretched but forced in upon itself.

Mr. J. M. Patterson, of Woodbury, N. J. the patentee, is manufacturing these trimmings, and furnishes them to the trade. He is also selling shop rights to those who desire to manufacture their own trimmings instead of pur chasing. This process of making the tops of cans will effect a very great economy in the manufacture of this class of goods, and doubtless in the end produce a great increase in the volume of the manufactured product.

A Suit for the Possession of a Rich Iron Mine Settled.

The Troy Times says: In 1867, Edmund Law Rogers, the owner of the track upon which the Chautaqua iron ore beds, among the richest in Essex county, are situated, made a contract with certain parties, in which he agreed to sell them four-fifths of the property. Subsequently he refused to fulfill the terms of the contract, and in 1870 a suit was commenced against him, the object of which was to compel him to execute the contract. This sut has been dragging its slow length along, until last mouth, when a new contract was entered into by Edmund Law Rogers and his wife, of the first part, and Smith M. Weed, A. Williams and C. F. Norton, of the second part. Mr. Rogers leases the company lots 257, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 284, in township No. 5, old military tract; each lot containing 2131/4 acres, and lot No. 100, in township No. 5, old military tract, containing 640 acres, for a term of 40 years from April 10, 1875, on conditions that the company pay him during the first 15 years a royalty of 30 cents per gross ton for every gross ton of separated ore or pig iron which they may produce from said tract, and for the remaining 25 years, 40 cents per ton, and also the taxes on the tract during the time of the lease. The company has, by terms of the contract, the right to explore for new ore beds, and "to cut and use and dispose of any and all wood and timber upon the tract," erect buildings, blast furnaces, etc. The company is to have the preference of future leases, and if it fail to work the mine for a period of three years, the lease may be declared forfeited. The tract is heavily timbered, and this alone is a source of great wealth.

The French government has voted 600,000 france toward the French department at the Philadelphia exhibition, and a telegram has been received from the English Commissioner in London which removes a difficulty felt by many would-be exhibitors. The American government had insisted that the prices affixed to the foreign articles exhibited should include the import duties, but as the object of European manufacturers was to show the American public that their goods were produced at less cost than across the Atlantic, they naturally objected to a regulation which prevented a fair comparison from being drawn, and some, especially Sheffield and Bradford houses, refused to exhibit under such a condition. The telegram announces that prices may be affixed in certain form, without including the import du-

The Camden (Me.) Anchor Works cover nearly two acres of ground. They are now running three large hammers, and employ 35 hands Their machinery is first-class, specially adapted to their business, and driven by water-power. This firm have been established nine years, and the first large anchors manufactured east of Boston were made by them. They manufacture anchors, windlass necks, truss shapes, and chains. They consumed the past year over 800 tons of iron. They are now putting into their works a machine for testing anchors and chains (called the English dead weight and lever test). which will be in operation by the first of

Some idea of the extent of the pipe system of the oil region of Pennsylvania may be gained from the statement that the associated lines are now taking oil from more than 2000 wells south of Oil City. They have pipe enough now on the ground to carry all the oil from this region for the next 50 years, the present flow being 20,000 barrels a day, though the lines have three times that capacity. The capital invested is about \$5,000,000.

The Ottumwa (Ia.) Iron Works, which now include the American Iron Works, have two new brick machine shops, each 40x90 feet, a brick foundry 60x70, and a pattern shop 30x40, and are melting 250 tons of iron annually. At these works Johnston rufflers for sewing ma chines are made by the 500,000, more or less,

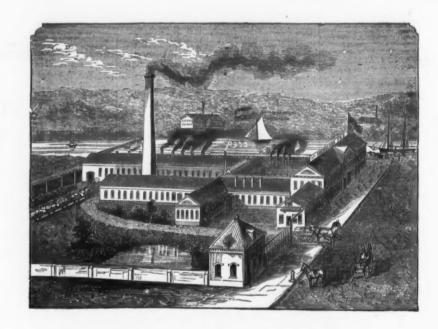


Stafford Manufacturing Co.'s STENCIL COMBINATIONS

For marking boxes, barrels, bags, and packages for shipment. Printing all niner of show cards, notices, signs, numbers, prices, &c., and other purposes o numerous to mention. Instructive and amusing for boys.

WHOLESALE PRICES. 15 in., per dozen. \$6.00 | Size, 15 in., per dozen. \$10.00 |
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No. 66 Fulton Street, New York.



DEALERS AND CONSUMERS

OF FILES

SHOULD PURCHASE THE

cholson or "Increment Cut" File

FOR THE FOLLOWING REASONS:

First.-They are made from the best quality of File Steel.

Second.-Each File undergoes a careful inspection after each operation, by critical inspectors, and none but perfect work allowed to pass

Third .- They are cut by the "Increment" or irregular cut, therefore combine the advantages of both Hand and Machine work.

Fourth.-They will finish finer than Files of any other make of same degree of coarseness

Fifth.-They will not "pin" or scratch like hand-cut Files.

Sixth .- The "Increment cut" File, by our records, will remove more stock with a given number of pounds applied than any other File with which we are acquainted.

Seventh .- All Files under seven inches are put up in boxes of one dozen each, and neatly labeled.

Eighth .- The large stock carried by us, combined with our superior facilities, enables us to fill the largest orders at the shortest possible notice.

Ninth.-We are constantly making careful tests of our Files by delicately constructed machinery, which automatically records the actual power applied, forward, backward and downward, at each stroke of the File, also the strokes, combined with the work performed, enables us not only to judge of the quality of our Steel for wear, but also of the cutting qualities of the File, and the ease (expressed in pounds) with which a given amount of work can be

Finally.-Our Files are warranted to be hard, well cut and sound. They are exclusively used by many of the largest Railroads and Machinists in the country-and the vigorous growth of our reputation, not only for making a good article, but of our ability to furnish a good article cheap, is evidenced by the large number of Dealers and Jobbers who are handling our Files exclusively.

NICHOLSON FILE COMPANY, Providence, R. I.

SOLD BY HARDWARE DEALERS GENERALLY.

HAVEN NUT



HOT PRESSED NUTS Of Superior Quality of all sizes, both

HEXAGON & SQUARE, From % inch to and including 1% inch Bolt.

Factory and Office, - - - -WESTVILLE, CONN

SUPPLIES

Railways, Machinists and Amateurs, Gum and Leather Belting, Packings and Cotto Waste, Babbit Metal.

FINE TOOLS for Machinists and Amateurs; Barnes' Foot Power Scroll Saw; Foot Lathes all kinds. Sole Agents Baxter Steam Engine. Iron and Wood Working Machinery. Send for Price Lists.

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SAFE DEPOSITE WAREHOUSES:

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"Wood Choppers' Pride." Wetmore's Hatchets. Tackle Blocks.

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nometers. Improved Iron Bench Planes and

other Tools. Chapin Machine Co.'s Boring Ma-

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H. Chapin's Son's Rules, Planes, Gauges, Plumbs and Levels, Try Squares, T Bevels, Hand Screws,

IMPORTERS OF

Stubs' Files. rench Coffee Mills, and General Hardware and Cutlery.

mplete and extensive stock always in store Catalogues mailed on application.

JAMES HENSHALL, Engineer, Machinist & Blacksmith.

1056 Beach St. PHILADELPHIA. Drawings made to order. Repairing of all kiss promptly attended to. Blacksmithing executed all its branches.

Designing & Engraving ON WOOD.

Done in the best manner at the office of The Iron. and The Metal Worker, 10 Warren Street, New York.

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HENRY DISSTON & SONS, Keystone Saw, Tool, Steel and File Works.

Front and Laurel Streets, Philadelphia.

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Our Celebrated CROSS-CUT AND WOOD SAWS.

THE GREAT AMERICAN. In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWS ever offered to the public. The most important peculiarities of this Saw are as follows:— The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it. In using this improved Saw there is none of that "tearing of the twood, undue friction and drag," which in many other improved Cross-cut Saw demand so much muscular exertion without a commensurate result. The manufacturers declare that there is no Cross-cut Saw in the warket by which so much work can be done in ten hours, with so little exertion, as the "Great American Regulating Cross-cut."

THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guaruntee this handle to be superior to any in use.

THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.

Manufacture Manufa

THE NONPAREIL.

The Nonparell, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.

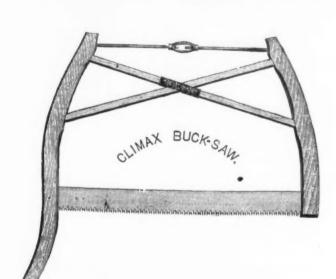
DISSTON'S NONPAREIL SAW

GAUGE FOR REGULATING CLEANING-TEETH.

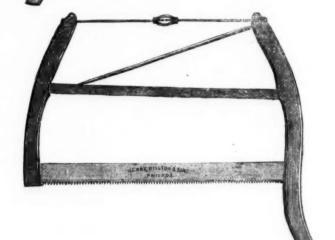
The Cleaning-Teeth of all Saws should be somewhat shorter than the Cutting-Teeth, and, although shortened, they should be of uniform length throughout. The inner edge of the Gauge rests on the points of the Cutting-Teeth, the Cleaning-Teeth projecting through the opening in center of Gauge. Reduce the projecting points by means of a File, until arrested by the edges of the Gauge, which s made of hardened steel. Thus Tooth after Tooth can be rapidly and correctly reduced to an even length by any unskilled operator.



Showing the Gauge in Position for Filing the Cleaner-Tooth.









DISSTON'S WOOD SAW FRAME.

New York Wholesale Prices, July 14, 1875.

HARDWARE.	Fast Joint, Narrow, Lt. and Regular dis "Broad dis Loose Joint, Narrow and Broad dis Loose Joint, Narrow and Broad dis Table Butts, Back Flaps, &c dis Inside Blind, Regular dis Loose Pin. Wrt dis May list dis Union Spring dis Surray dis 60 60 60 60 60 60 60 60 60 60 60 60 60
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Lightning	Seymour. dis 55& Shepard
Resaing	Nicholson. dis 45& Huffer. dis 83;6 Granton No. dis 61,6 61,6
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Douglass	CapsPercussion, per 1000.
Griswold	Nos. 2, 4 35, 6, 5, 10 Capss-Percussion, per 1000. G. D. Strong
Clin lax Silcer	Carpet Sweepers, Cach \$2 75 U 10
Lewis Single Twist Bits	Cartidges.—Motallic
Expansive Bits, Clark'small, \$15; large, \$25—dis 15 5 Ives'	Cotton
Hollow Augers, Douglass'	P. S. & W ner doz \$2 00; dis 408 Sargent's per doz \$2*88—dis 50&10& f:n.ate.ps.
"French, Swift & Co) Bonney's Adjustable. N doz \$48—dis 25 % Stearns" N doz \$43—dis 25 %	ikater». dis 30&10 @ 3ed. dis 40&10 @ Plate and Shallow Socket dis 40& Deep Socket. dis 40& Sattle Lenalers. new list dis 60&
" Ives' Expansiveeach \$4'50—dis 40 % " Universal Expansive, each \$4'50—dis 10 % Gimlet Bits—Screw, \$7'50: no screw, \$5dis 20&10 %	Chain Leaders
Double Cut Gimlet Bits, Shepardson'sdis 30 % Hartwell'sdis 50 % Douglass' dis 20 &10 20 &20	Chair Chai
Morse's Bit Stock Drills	Trace, 6%-10-2. by the cask, # pair, gold. Trace, 7-10-2. by the cask, # pair gold. German Halter Chain. dis 20 % ge
Vatrous Ship Augers	German Coll. dis 30 % g Gaivanized Pump Chain & b Jack Chain, 1ron
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Western dis 25 %	Board and Box
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Tool Co. State S	Iron, steel points. # No. 5 Crucibles.—Gautier & Co. # No. 5 Curling Irons. & C. \$\frac{7}{2}\$ \times \text{ in p. 150}\$
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10 20 30	R. Ibbotson. 5 00 to £ go Turton Bros. & Matthews. 5 50 to £ curren Ashworth's (Van Wart & McCov). \$5 to £ curren	d
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le	Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ go "Only "Horse Rasps	ld ld
d	Limet & Co. (French)	ld
et et	Mrs. Coles Pony. 4 in., \$4'55; 5 in., \$5; 6 in., 5'30; 7 in., Knox, with 4 inch Rolls	et et
R. P. S. S.		et
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ANA	Champion, 6 inch rolls. \$7 b) each m	et
MANA	" 4½" 6 50 each n Empire 400 each n Euryke No. 1 7 hoh Poll 800 each n	et et
de	K. F. M., 4%-inch Roll. 5 60 each de 15 6 up e	etwa
CCC	Myers Fashion Fluter, 43.inch Rolls 2 75 each no. Convex Brass Fluter, Sad Iron attachment. \$1.00 each no. \$1.00 each no. \$1.00 each no.	et 75
des	Fairy, Self-Heater 00 each no Geneva Hand Fluter. \$1.00 per doz no	et
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d	Gimlets. Nail and Spike	XX
	Gimlers dis 25&10	N. N.
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6	Hammers. Emmet Hammer Co.'s Handled	K K
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z	Magnetic Tack dis 25-210 Warner & Noble's dis 10 Hand Cuffs and Leg Irons Tower's Hand Cuffs & 50 per pair Leg Irons \$\$ 50 per pair Leg Irons \$ 50 per pair Leg Irons \$ 25 dis 10 Handles dis 10	£ .
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Stocks and Dies	Candiesticks, JapannedNo. 1 2 Cake Boxes, RoundPer gross \$500 7.70 Cake Boxes, Round	O'NEILL'S PATENT PLANISHED COPPER. 14 and 16 oz. and heavier	French Window—1st, 2d, 3d, and 4th qualities. Per A. C. Downing & Comp'y,
Sand Stone \$ \$ \$ 6 dis 20 & 10 \\ Washita Stone \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	t Oak "	14 and 16 oz. and heavier 39r. By the case, 38c F 7	6 x 8 to 10 x 15
Arkanssa Silps. No. 1, \$\pi\$ \$200 ne grindstones, Family, J. F. Green & Bro dis 20 stavr Polishs \$\pi\$ gross \$6.00 dis 25 \$\pi\$ gross \$6.00 dis 25	Molasses CupsPint 1/2 1 2 4 4000	14 and 16 oz. sud heavier	15 x 36 19 x 50 19 x 5
Squares dis 50 %; full cases, dis 50&10	Toy Cups. Flaring Vo. 14:55. 38:75. 37:25. 27:35.	Larger than 30360	34 x 58 to 34 x 50
No. 2	Trunks. Wire Handled	Proc. Proc. Proc. Proc.	BIZES. I. III. IV. And Car Glass. etc.
Tackss. dis 45471/2 Full Weight American Iron. dis 45471/2 Half Weight American Iron. dis 725/4871/2 Carpet. dis 75/2 Brads American Half Weight. die 50471/2	PLANISHED TIN WARE, dis 20 %. Planished Coffee Pots, Round. Each	Pipe	1 96 = 90 to 94 = 96 11/10 1 10/80 18: 18
Half Weight American Iron. dis 72/26/13/ Carpet. dis 73/ Brads American Half Weight dis 504/74/ Floishing Nails. 5 5 1 1/2 in. and over \$\forall \times \tim	Tinta	N. F. U	BY SE TO SE
American Flash and Cap Co	Claims Color Col	at 7 cents perlb., or under, 2½ cents; over 1 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1½ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as	Sizes above—\$12.00 per box extra for every \$ inches. An additional 10 per cent, will be charged for all Glass more than \$0 inches wide. All sizes above \$2 inches to perform to any other Light for Mining Purposes. Manufactured by
Eddy's. die 30 ; Fen Trays. American Ten Tray Co. die 15 ; Thermometers. die 50% 10 ;	Planished Oval Coffee Biggins Pints 1.00 1.	Tool	Discount 50 @ 50 de 5 %.
Tobacce Cutters	Tachina 10 2 14 16 18 20 2 4	Spring 10c	PRATT & CO.,
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Traps. dis 20 9 Peck, Stow & Wilcox. dis 30 9 Peck, Stow & Wilcox. dis 30 9 Blake's Patent. dis 30 9 Moase, Wood Choker. w doz holes 15 & 16 Peck Petent Chocker (Union Nut Co.) w doz holes 16 18 net Round, Wire w doz 81 50 to 3 00 net Peck	Pints 136 3 4 5 Each 30 90 1 00 1 20 1 50 1 75	Tool, extra fine	BUFFALO FORGED HORSE NAILS. These Nails are superior, being made with new and improved machinery and actually hammered from the very
Round, Wire # dox # 3 6 to 2 50 ne "Round, Wire # dox # 3 6 to 2 50 ne Care, # doz # 5 to 2 50 ne Car	Each	Extra Cast	best brands of Norway Iron.
Dission's Brick Gis 12/5		Blister, 1st quality 14%c	
Triers. Butter and Cheese			
Trenton Vises, Solid Box. dt to 160 lbs	Oyste Dish CoversNos. 1 2	12%c	
100 and 100		per 100 lbs. Silesian, cash	
	Stow's Patent Hollow Tea Pot Handles Adamenting	TIN-DUTY: Plates, Sneets, Tagger and Terne, 1'ic per lb.; Electro-galvanized Plates, 2 cents per b; Manufactures of, not enumerated, 25 per cent. ad val. Bars, Blockand Pigs, free. Banca, subject to dutyof 10 per cent. Banca	5
Parker's	No. 12, Bronzed and Tin-Tippedper gross, \$13-50 aucepan Handles. Or Bess hadleacle Iron. P. S. & W	Straite	7 8
Revised listdis 60&10 %	No. 2, 6 " " 3:75 No. 3, 6¼ " " 4:00	I X 10x14, " 12 20 12 12 12 12 12 12 12 12 12 12 12 12 12	Orders solicited from the Trade. GEORGE B. WALBRIDGE & CO., New York Agents.
## Free ## ## ## ## ## ## ## ## ## ## ## ## #	No. 6, 9 475 No. 1, 5½ inches long. per gross, \$425 No. 4, 6 450 No. 3, 6½ 4750	For each additional X add. 2-25 CORE TIS PLATE. Beat. 2d Quality. Ordinary. I C 10x14. \$9-50 @ 10-00 8-75 @ 9-90 8-25 @ 8-75 L 12x12. 10-00 @ 10-25 9-90 @ 9-25	Francis Axe Co. "George Washington"
Tinned dis 25 ⊕ 36 s Cast Steel	No. 5, 76 " " 5-25 No. 5, 8 " " 5-50 No. 6, 9 " " 5-75 Japanned per lb. 16 Finned 20 From Rettle Ears (P., S. & W) dla 65 s	TERNE PLATE. Prime Char. 2a qual. I C 14x20 \$ 9°25	Buffalo, N. Y. HATCHETS,
Stupe' Steel Wire. \$7.00 to £ gold	Per gross pairs88c \$1'00 1'50 1'75 2'10 2'75 8'75 1'33	IX 14x20, 11-99 I C 20x3 19-50 I X 20x28, 19-50 I X 20x280, 2824 © 28-50 Z 1NC, DUTY: Pig or Block, \$1.50 per 100 lbs. Sheet	Diamond Edge Silver Steel Berch Axes, &c.
Clothes Line Wire	Nos		AXES. Orders Solicited.
Collins & Co.'s dis 45	Per gross pairs.	Old Metals. (Dealers' Selling Price.)	G. B. WALBRIDGE & CO., 99 Chambers Street, New York.
Tait's Pattern dis 70ditie Davis steet Duptex dis 70ditie Davis steet Duptex dis 70ditie Semis & Call's Patent Combination dis 30d Semis & Call's Patent dis 30d Semis & Call's Patent dis 30d Semis Call's Patent dis 30d Semis Gall's Patent dis 30d Semis Gall's Patent dis 30d Semis Gall's G	No. 30 Large	Copper	
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Novety. 9 doz 77-00 77-00 Wringers without Cog Wheel. 9 doz 25-00 6000	Plain with Cast Plumber's Corapers—(P. S. & W)	Spelter No. 2	
STAMPED TIN WARE, dis 5 %. COMMON STAMPED WARE, &C. Bucket Covers.	APAN Draw Bare 1 to 14 cents per lb Sheet Band	Paints.	
Quarts ½ 1 2 3 4 Inch. 4½ 58-16 65-16 6% 7 11-16 Per gross \$2:00 2:60 3:40 4:25 5:75 Quarts 6 8 10 12 Inch 8% 9¼ 9¼ 109-16	then by new cond live of new toy a less rate of duty	ordinaryse	
Per eross 86:50 8:00 8:00 11:50	Hoop and Seroll, 1% to 1% cents per ib. Provided, that house of the above from shall pay a less rate of duty than 30 per cent. Plg. 37 per ton: Pollshad Sheets, cents per lo., Wrought Serap, \$5 per ton: Cast Serap, \$6 per ton: Lailroad, 70 cents per 100 lbs. Boiler and Plate. 1% cents per lb. Pis Tran—AMERICAN.	Torry Drop, fair	
Tech.	Foundry No. 1	Torry Drop, falt. 15c	Shears for Rd. & Square 1/4 to 11/4 in.
Small Medium Large	Foundry No. 1	Torry Drop, falt. 15c 15	Shears for Rd. & Square 1/4 to 11/4 in.
Small Medium Large Large Large Small Medium Large	Founder No. 1 * ton, \$27, 90 44, 28 c0 Foundry No. 2 * 25 00 42, 28 c0 Foundry No. 3 * 25 00 42, 25 00 Gray Forge.	Torry Drop, falt. 15c	Shears for Rd. & Square 1/2 to 1/4 in. Successors to the BIDDLE M. & T. CO., Sole Manufacturers of Punch, 1/2 to 1/2 in. 1/4 in. plates. Shears for Plates and Bars. Lyon's Patent Hand and Power
Small Medium Large Large Large Small Medium Large	Founder No. 1.	Torry Drop, falt. 15c 15	Shears for Rd. & Square 1/2 to 1/2 in. Successors to the BIDDLE M. & T. CO., Sole Manufacturers of Punch, 1/2 to 1/2 in. 1/2 in. plates. Shears for Plates and Bars. Lyon's Patent Hand and Power DRILLS. SHFARS AND PUNCHING PRESSES.
Small Medium Large Lar	Founder No. 1. * ton, \$27, 90 46, 28 c0 Founder No. 1. * 500, \$25, 00 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 62, 20 00 Gray Fren. * 22 50 62, 25 00 Gray Fren. * 25 50 62, 25 00 Gray Fren. * 26 00 62, 25 00 Gray Fren. * 26 00 62, 26 50 Gray Fr	Torry Drop, falt 156	Shears for Rd. & Square & to 1 & in. Successors to the BIDDLE M. & T. CO., Sole Manufacturers of Punch, & to & in. & in. plates. Lyon's Patent Hand and Power DRILLS, SHEARS AND PUNCHING PRESSES For workers in Iron and Steel, adapted for all trades.
Small Medium Large Lar	Founder No. 1. * ton, \$27, 90 46, 28 c0 Founder No. 1. * 500, \$25, 00 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 62, 20 00 Gray Fren. * 22 50 62, 25 00 Gray Fren. * 25 50 62, 25 00 Gray Fren. * 26 00 62, 25 00 Gray Fren. * 26 00 62, 26 50 Gray Fr	Torry Drop, falt 156	Shears for Rd. & Square & to 1 & in. Successors to the BIDDLE M. & T. CO., Sole Manufacturers of Punch, & to & in. & in. plates. Lyon's Patent Hand and Power DRILLS, SHEARS AND PUNCHING PRESSES For workers in Iron and Steel, adapted for all trades.
Small Medium Large Lar	Founder No. 1. * ton, \$27, 90 46, 28 c0 Founder No. 1. * 500, \$25, 00 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 23 90 42, 26 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 Gray Forge. * 21 90 42, 20 00 62, 20 00 Gray Fren. * 22 50 62, 25 00 Gray Fren. * 25 50 62, 25 00 Gray Fren. * 26 00 62, 25 00 Gray Fren. * 26 00 62, 26 50 Gray Fr	Torry Drop, falt 156	Shears for Rd. & Square & to 1 & in. Successors to the BIDDLE M. & T. CO., Sole Manufacturers of Punch, & to & in. & in. plates. Lyon's Patent Hand and Power DRILLS, SHEARS AND PUNCHING PRESSES For workers in Iron and Steel, adapted for all trades.
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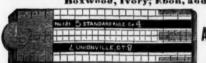
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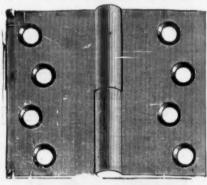
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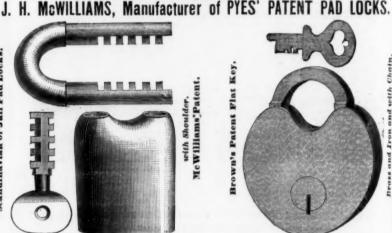
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Ronney's Pat. Hollow A	HOOPE			cive on
Stearns' Patent Hollow				
Landers, Frary & Clark Morton's	·6) o	old on M	l ant a	
Morton's	}	List	orto	dia 50
Common Spring with	Hook	. W gos	81 9	8021
Common Spring with in Bella Bevin Bros. Mrg	Co. Light	Hand	47 0	0 100 10 1
Common (Tissue Paper	Walnet			dia 70
SWISS PARTERN HAND BE	116			CATC. 2011
Connell's Door Ber's. Gt. Western & Kentuck		dis 50	£5 @	50&10
Boring Machines B	Rates' Mfg.	CLIS SUNE IN	0 0 56	1043
plete with augers	********		die 2	0 @ 25
Douglas Mfg. Co., com	plete with	augers.	dia 3	0 @ 25

Hote
Beilsdis 70 common (Tissue Paper Weight)dis 70 cdis 7
Common (Lissue Paper Weight)dis 70&10
Swiss Pattern Hand Bells
Connell's Door Ber'sdis 50&5 @ 50&10
Gt. Western & Kentucky Cow dis 500c10 @ 50 10.63
Boring Machines Bates' Mfg. Co., com-
plete with augersdis 20 @ 25
plete with augersdis 20 @ 25 Douglas Mig. Co., complete with augersdis 20 @ 25
Common Boring Machines, no Augers\$4 00 @ 3 7
Angular " 5 on G 4 "
Western " " "
Western Carriage Boltsspecial price Philadelphia
** Eagle, (Coleman's)dis 60
Wrought Shutter, Stanleydis 50 @ 50 x 10
BracesBarber 8
Packusdis50
Bartholomew s American Balidis 10&10@ 15&10
Chottana
Butts.—Cast Fast Joint, Narrow dis 25&10 @ 30&10
Broaddis 35&10 @ 40&10
From West Form Form
Cast Fast Loose Joint
Mayors & Parliament dis 28 20 0 45 410
" Acorn Jap'ddis 40&10 @ 45&10
Wrought Loose Pindis 35&10
Table Hinges and Back Flaps dis 30&10
" Narrowdis 30&10
Loose Joint dis 354-10
Parker's Blind Butts
Sheperd s Discount 50% 10 % by the case
Garretson's
Clark's
Lull & Porter's

Lull & Porter's	11
Garretson's Blind Butts Light No. 0) Discount 61 3	Ľ
" Luil & Porter Pattern By the case	١.
Cherrytree Bilad Butts) 60&10 %	11
Chains.—German Haiter	1
Galvanized Pump net 13 @ 18%c	H
Best Proof Coll Cham-	U
9 5 14 1034 934 9 83 834 86 gold 5.16 5 5.16 5 7.18 35 % in.	P
By the cask, 560 lbs., %c per lb. less Common Chain. %c per lb. less.	١.
	п
ChiselsSocket Framing dis 60 @ 60&10 %	1
Socket Firmerdis 60 @ 60&10 %	1.
Tang Beatv s Framing and Firmer	13
Beaty s Framing and Firmerdis 2 %	1
CastersIron Beddis 30&10 @ 40 %	1
Porcelain Wheel Beddis 30&10 @ 40 %	1
Iron and Brass Wheel Plate dis 40 @ 40&10 %	í
Porcelain Wheel "dis 50 @ 50& 10 %	1.
Clothes Wringers,-Universalpet doz \$64 00	
Noveity	1
Discount on 2 dozen lots. \$2 per dozen.	1
Cofree Mills.—Common Box and Sidedis 15 %	1
Patent Box and Sidedis 15 %	1
Cutlery.—American Pocket (best)dis 25 %	1
Landers, Frary & Clark, J. Russell & Co. and Lamson	1
& Goodnow Mfg. Co. Manufacturers' net prices	1

Fry Entere
Tinned
Burnisheddis :0 @ 45 %
30 doz. \$3 00 3 75 4 25 4 75 5 45 6 60 7 00 8 0 9 00
No 0 1 3 3 4 5 6 7 8
Files. Nicholson Mill Files
" Taper "
Butcher's Mill (Advanced March 5th)\$5 25 to £ gold
Hastard 3 25 to £ gold
" Taper 5 25 to £ gold
Fluting Machines. K. F. M.—4% in. rolls. \$5.50
Mrs Knox 4 in. rolls, \$5 75
Hammers. Yerkes & Plumb's
Veresdis 20 %
Hatchets.
Destroy a
Shingling and Half. No 1 2 3 5 00

Shingling and Hair (No 1 2 3
Yerkes & Plumb
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
Claw (\$\text{\$\text{\$\text{doz}\\$7-50}} 8:00
Strap and T. (Changed March 24)
Horse Nalis. Nos. 6 7 8 9 10 Ausable. 27 25 24 25 22 Globe. 28 26 32 24 25 25 Brundago. 26 24 23 22 21
Ausable. 27 25 24 28 22 Globe. 28 28 25 24 28 Prundaze. 26 21 23 22 21
Brundage 26 21 23 22 21
Putnam 32 38 26 25 24 23
The Ocer Mortise and Mills
Makes in Combination
Mineral and Rim dis 5 g
Mineral and Luiches.—Rim and Mortise dis 45&5 g
Till and Cupboard dis 25 % American Padlocks dis 50 % Scandinavian Pad Locks.
BOSHULLEY

@ doz\$10-\$0 10-50 12-00 12-00 15-00 15-00 dis 15 5	2
No 9 91/4 10 101/4 11 111/4 dis 15 9	٠,
# dos	٠Ē
	١.
Thumb and Roggens Latches dis 25 9	i i
Trunk Locks. dis 5 (s) 10 25 Thumb and Roggens Latches. dis 25 3 Lauterns. Square Candic and Oil. dis 10 3	î l
Globe for Oildis 10	31
" Kerosenedia 10	31
Mahadan Tantorna dia 10 s	21
Tubular Lanterns	21
Hattocks, -Long and Daore Career.	91
Western Patterndia 25	5 J
Pennsylvania Patterndis 15	6
Hotasses Gates.	
Paternelse Mfg. Co.'s Measuring Paucets	E [
Stebbins' Gates	E
Lincoln's "	6
Lincoln's Clark's Petroleum	K I
Taylor's Petroleum Faucetsdis 20&10	6

Pennsylvania Patterna
Motasses Gates.
Poteenglas Mfg. Co.'s Measuring Faucetsdis 20 %
Lincoln's "
Lincoln's dis 40&10 @ 50 % Landers, Frary & Clark's Petroleumdis 15&10 %
Taylor's Petrolenin Faucetsdis 20&10 %
dia 15 d
Woodenst
Stowe dis 15 %
Walter of the Control
Stuffers
Planes Anburn Tool Co., "Bench"
Record Onality
Marattle Piane CO
Evans Pat. Circularnet
Diambe and Levelse
Addinatable discussion
Non Adjustable
Plane Irons American.
Butcher'sgold £, \$5 50
Date of Deliadelphia net

Malleable Garden				B 40 (G 4	17300 76
Wood Head Iron To	eth			d	a 40 %
stantun nda - Amer	tean Pa	attern		d	le 15 %
@ dox85.50	7.00	9:00	10.00	11.00	12.00
No 50	100	150	200	450	200
				d	is 15 %
30 dos \$7.00	8-67	10.67	12-67		
# dos\$7°00 No 50	100	100	200	250	300
L. F. & C. Excelstor				4	is 10 %
30 dor	10:00	12:00	15.00	18:00	21.00
Seythes, -Golden C	lipper.	Damage	ens Blad	e. Hoxe	ia i
and Champaned				oz. \$10°	00 net
Golden Clipper N	0.: 10.	Boxed	and		
Sharpened	0. 40.			dox 80°	75 net
Green Clipper N		Boxed	and	mon 4.	.,
Sharpened	U. 09	posed	- 10	dox 894	50 net
Sharpened			an do	97-80	9-00
Common Scythes	d france	now No.		at m. n	10 50 S
THATESSteel and	I Iron.	DCAL ITE		4	to 15 of
awa, -Dieston's Or	one Cus			dia	10 14 76
Disston's Hand		11 2" AL		24-0-0	1079 %

# doz#9*00	10.00	12.00	10.00	19-00	21.0
37 160	3183	1743	20.00	3000	300
owther Golden Cll	pper, I	Jamasc	us Blad	e, Boxe	00
and Sharpened			# 0	OZ. \$10°	on trea
Golden Clipper No.	. 10, 1	poxed	and _	4 00-	
Sharpened Green Clipper No.		******		goz sa.	ib Be
Green Clipper No.	. D, 1	poxed	and		
Common Scythes			W doz	\$2.00 G	B BU
THO PERSteel and	Iron. 1	sew man		a	8 50 3
on war Prince on the copy of	ia cus.			C	18 12 7
Disston's Hand W. McNiece s H'd. C				dia	1276
W. McNiece s H'd. C	ross-Ct	it & Cli	rc'r, nev	y Hat.d	a 15 1
Boynton's Lightning.	new I	BL			18 90 1
" Champion				di	8 45 9
hovels and Spade	D%+.				
Rowland's Plain Bace	L Jan.	434			la 25 4
" Back Strat	0	**		C	18 20 1
Ollman Amos & Sons			DOW	tar dia	1234 9

ad Irons.—Richmond (polished face) per 1b. 8%	c
Richmond (polished face) by the cask " 3%	c
stone.—Arkansas Oll. No. 1	8
Turkey Oll. No. 1	Ю
Washita Extra	ė
No. 1	ĕ
ti 11 2 11 18	
." " 5%	
Screws Iron new Hat. April 1st, 1875, dis 6254	ä
brassdis 52%	ä
Spoons.	"
Plateddis 40& 10 @ 50	a
Britannia, Boardmans (new list)	7
Parkers (old list)	2
	3
German Silverdis 30	8
" Lightnew list dis 35	3
Lalance & Grosjean Iron die 10	75
Springs, Grav's Door	9
Torry's Doordis 50 @ 50&10	15
Stocks and Diesdis 10&5	9
Stove PolishGem # gross, \$5"	ж
Onyx \$50	Œ
Onyx	9
Stanley Rule and Level Co dia 45.6-10	14
Disston's No. 2	á
Tacks, &c Half Weight Tacks dis 72 4	4
" by the case dia 2214 A-714	6
Clout and Finishing Natis. 734 by the case	6
" hy the case die 712	3
Traps Genuine Oneida - Newhouse list dis 20	2
Imitation " " dre 20	2
Vises. Solid Boy engrency 20 more	. 7
Vises.—Coes Interior Werecht Research dis 30 Wrenches.—Coes Genume	Н
Coes Imitation Wrought Bardis 50 & 50 v 10	2
4 Mallanda Ber	2
Malleaple Bar dis 60&10	1
Tafta Pattern (Wellogg) Malleable Bar dis 65 & 10	1
Tafts Pattern (Wrought Bar) dis 70 @ 70& 10	4
Philadelphia Too: Co.'s Pat. Duplexdis 25	- 5
. Improved Baxter dis 25	d
Wine Wo Oca 18 Adjustable Forkdis 25	4
No. 19 to 26 to 18(Advanced April 24th)dis 40	li
No. 12 to 20	i
No. 27 to 30	
No. 19 to 26	14
Tinned Broom Wire. dis 15 @ 20 Galvanized Wire No. 1 to 18 dis 25 Galvanized Wire No. 2 to 18 dis 40 Galvanized Wire No. 3 to 18 dis 40 Galvanized Wire No. 4 to 18 dis 40 Galvanized Wire No. 5 to 18 dis 40 Galvanized Wire No. 6 to 18 dis 40 Galvanized Wire No. 7 to 18 Galvanized Wire No. 7 to 18 Galvanized Wire No. 7 to 18 Galvanized Wire No. 7 to	i
Galvanized Wire No. 1 to 18	į,
	19

BUFFALO.

Reported by Musers. Sidney Shepard & Co.	- 1
June 1, 1875.	- 1
Augere—Snell Mfg. Codis 2	5 %
Bells Cow Yaws Country dis 4	04
Bolts-Carriage and Tiredis 3	0 %
Braces-Bit, Spofford's Patent uls 75&	5 %
Roards Stove Decelet D	2 4
Butts-Brassdis 3	5%
Wrought Narrowdis 3	0%
Broad, Loose Jointdis 3	NJ S
Wrought Butts, Loose Pla	0 6
Beiting-Rubberdis 8	5 %
Leather, new list, oak tanneddis 30 @ 1	0 %
"Rutherford (BOX Of 2 GOZ) Hest English	1:25
Can Openers-Sprague's	1:00
Cases—Parlor Coal Hoddls 5	0 %
Red Carpenter's	57c
Biue, "	900
Chisels-Firmer Socket	1.00
Corner Socket Chicale	0 %
Slick's Carpenters'	0 %
Castings-Malleable	0 %
"Centrinetal"	100
Elbows-Corrugated 5 BL per doz	5.00
Charcoal	
Files Maischoss Bros. 7:00 9:50 12:00 14:00 (dis)	10 %
Fluters-Geneva Handdis 5	0 %
Freezers Ice Cream-" Champion # doz. \$19	2.00
Hinges Gats—Shenard's	6 %
Hinges-Window Bling- dis 80&1	0%
Shepard's and Standard	
Rods Coal-Plain Black and Cai dis 334661	0 %
Funnel, Black and Galvanized	10 %
Fancy and Helmetdis	10 %
Kettles-Brass	Mcc.
Conner " Hand Made"	
Copper, mana state	45c
Enameled	45c 45 ≰
Enameles dis 40 @ 4 Knives. Drawing—Oval No. 1 dis 50& 1 Razor Blade dis 60, 10& 1	45c 45 % 10 % 10 %
Enameled	45c 45 % 10 % 10 %
Enjuncies	45c 45 % 10 % 10 %
Enameles	45c 45 % 10 % 10 % 10 % 10 %
Enimoeles	45c 45 % 10 % 10 % 10 % 10 %
Enancies	45 c 45 s 10 s 1
Enameles	45c 45 % 10 % 10 % 10 % 10 % 10 % 10 % 10 % 10
Enimoles	45c 45 % 10 % 10 % 10 % 10 % 10 % 10 % 10 % 10
Enancies	45c 45 % 10 % 10 % 10 % 1 · 00 1 · 50 doz 20 % 15 % 20 %
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Enincies	45c
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Enimeles!	450 8 8 8 10 10 10 10 10 10 10 10 10 10 10 10 10
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Enimoles	450 % % \$ 100 0 0 10 10 0 0 0 0 0 0 0 0 0 0 0 0
Enincies	45c 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Enimeles	45c 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Enimeles!	450 8585 800 00 00 00 00 00 00 00 00 00 00 00 00
Enincies	450 85 85 85 1000 0 11 150 0 25 5 5 5 5 5 5 5 5 5 6 5 6 6 6 6 6 6 6
Enincies. dis 40 de	45c 15 10 10 10 10 10 10 10 10 10 10 10 10 10
Enincies	450 855 5 10 10 10 10 10 10 10 10 10 10 10 10 10
Enincies	45c 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6
### Augers—Snell Mfg. Co. dis 2	450 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5

CINCINNATI.	
Reported by Sellew & Co., Importers and Jobbe Metals, No. 214, 216 and 218 Main street.	9'8
Tin Plate.—I. C. 10x14 Charcoal	18-0
I. C. Terne 14x20	28-0
I. C. Continuous	58.0

Tin Pinte1. C. 10414 Charcoan	19.4
I. X. 10x14 Charcoal 14 50 @	15-0
I. C. Terne 14x20 10.50 @	134
L. C. Terne 20x28 2200 @	28-1
I. C. Continuous	28.0
BlockTin	
Pig	b 28
Bars # 1	b 31
Molder	
A1 *******************************	b 18
Roofing 1	b 17
8. & Co	b 23
LendPig	736
Bar	834
Copper	
Ingot	B 24
Plantshed	g) 55
Sheathing " (a 33
Copper Drope	@ 35
	0.35
" 10 to 12 10 " (38
	a 33
	a 3
Zine, times, 500 to 1000 lbs	103
Case, 100 lbs	11
Slah	734
Breeze - Poll No 6 to 30	B 26
Roll, No. 30 to 38,	250
Wire No 010 20	36
44 90 00 95	40
Rabbit MetalSellew & Co	80
Allens'	.90
Market	15
A nelmony	b 1
Nickel	PO I
Plantshed A.	DD 4,1
the state of the s	124

NO8.	is to 20		12c l	No. 26			******
D	22 to 24 teel.—Si	Twee 1	13c	- 2		210	
Iron	Wire	uver,	is in 149	c; cre	scent,	SIC.	dis 35
Engr	eled W	are					dis 4
One	Piece Ce	TTODE	nted	Elbo	W. m.		dis 1
41.78	Charcoai ich	lron.	40.00	44 - 1	Russ	ia Iroi	
4 36 11	er Elho	A GOZ	\$5.90	436 10	cn		GOZ 80
Bis	14	6.6	4:50	Biz I			15 0
6		0.0	5'40	6 .			1
7	** ***	5.6	6:50	7 "			1
Lead				rimp	Reti	nned	or Gi
van	izedL	118.10 9	doz.				W d
9. (no	h		#1 75	91/.In	ch		
3-inc	h		2 25	814-10	ch		
4-inc	lron I		. 2 50	436-10	ch		
Shee	Iron	trene	I Par	1N			C 18.
Ame	rican B	rolle	PH			₩ d	02. \$1
Tinn	en's Ma	cutn	BH				(118 30 % S
Bros	a Ketti	n.m A	ngoni	0	*** ***		At 10 to
II)	rons						
1702							

I	PITTSBURGH.
	The following are the Card rates of Lewis. Oliver & Phillips, H.B. Newhall, 11 Warren St., New York, Agent Iron, standard list assorted sizes, for large orders, c card rate, 2 g off net. All prices f.o.b. currency in Pittsburgh.
	Flat Rail (1/x x/), punched and coun's unk. 4.4c % n ne Iron Wedges
	Crow Bars (in ordering please state whether "Wedge" or "Pinch' point)
	% round, bent to shape, 30c % ft. of fence. less 15 % of net. Discount off Standard List
	Carriage and Tire Bolts (new list)
	Machine and Square Head Bolts
	Pat. Hot Pressed Square and Hexagon Nuts.

з	Bott Ends
1	Pat. Hot Pressed Square and Hexagon Nuts.
1	small sizes, from 3-16 to % in
1	Pat. Hot Pressed Square and Hexagon Nuts,
1	large sizes, from 7-16 to 2 in 6 c P h off net
1	Washers, all made from new band iron,
1	small sizes, from 8-16 to % in 9 c P m off net
1	Washers, all made from new band iron,
١	large signs from 7.16 to 15 to
1	large sizes. from 7-16 to 1% in
	Nuts and Washers in 25 lb. boxes, ic ? Bex. Nuts and
	Washers in lots less than one keg each size, ic W h ex
	Nuts and Washers in 5 lb. boxes, 1%c. # h ex.
	Harrow Teeth, in lots of 1 ton or more, packed in casks,
	1 in. diam. 3%c @ m net; %. % in. diam. 3%c @ m net
	% in. diam. 4c W B net.
	Patent Headed Harrow Teeth, packed in casks, %c ? h er
	Skein Bolts, in bulk, in lots of I keg or more, % in. diam
	54c @ m net; 9-16 in. diam. 64c @ m net; 1/2 in. diam
	7%c ? m net. 1c ? m extra when less than 1 keg of
	each size is ordered.
	Screw Hook-and-Eye Hinges, & to 1 in. diam. 9c W
	net: % in. diam. 10c @ & net: % in. diam. 12 c @ & net

ě	net; % in. diam. 10c @ m net; % in. diam. 12 c @ m	n
500	Screw and Strap Hinges, in lots of 100 pairs or more, 1	4
ŏ l	56 in. long, 5%c 單 物 net : 8. 10 & 12 in. long. 6%c 單 数	1
ď,	Strap and T Hinges 331/4 % 10 % off net, delivery as	C
i c	tomary.	
c	Screw Hitching Rings	1
	Duck Nest Tuyere Irons\$14 50 @ doz	E
ŭ	Cast Iron Washers # 10 40	1
000	Bridge and Roof Bolts-	
ã	1 to 2 in. diam. over 8 ft. long P # 4 c	1
3	1 to 2 in. diam. from 4 to 8 ft. long 446	
g.	1 to 2 in. diam. from 11/2 to 4 ft. long " 41/40	
les l	%, % and % in. diam. over 4 ft.long " 4%c	1

Bridge	bolts	w.th upen plates,	et ende			%	C. P	20
W LOUIS	ne mo	WA	GON B.	ARDW	ARE.		.oc.	v
Wagon	Box	Strap Bo	Its-					
10 in.	long	by 7-16 at	Screw	End.	W set	of 8	bolte	ă.,
13	6.0	36	6.6		6.6	R	46	
10	64	9-16	6.0		4.0	R	6.6	
12	66	9-16	0.0		0.0	- 8	6.6	
14	9.5	9-16	6.0		6.6	9	0	
10	6.6	86	6-6		6.6	8	86	* 1
19	6.6	22	0.0		6.0		66	
1.4	64	20	66		6.6		44	
1.0	44	23	44		66		66	
16						8		11

ı		ach additions	al inch ov	er 14 in	. A!I
	In ordering Screw End	Box Strap 1	Bolts plea	se give	diam
	Wagon Box	Rods, narrow	track, each.	ch	
	Single Tree I	rons. W set on Bolster Pla	f four pie	ces	
	06	ii Dointel I la	8	, wide,	61
	11	44	814	44	66
	Wagon Beak	o Statebata o	8½	**	

			11	nished	WILD	gnard,	. eacn	
Wron	ght Ha	mmer	Straps,	heavy	patter	m, eac	ch	
	**					6.00	CHRY	
90	Ru	b Iron	is, each.					
Stay (hain	Hooks	, each					
Doub	le and	Single	Tree C	lips, fig	rure 1.	each.		
- 03		**	6.6		10 2	each.		
44		0.0	419					
					3,	each.		
Strap	Bolts	. Rode	, Single	Tree	Iron	s, Bol	eter	
Bral	ke Rat	cheta,	Hamme	r Strap	s, Rub	Irons	, Stay	į
Hoo	ks and	Clips.	in lots	of 50 s	ets			į
Wago	n Box	Staple	8, 136 to 5	234 in. t	o cline	h. W 1	000 1	
- 27	66	" Be	vel Box	Iron, to	o rivet	on. W	1000	ĺ
Nonz	Voko	ECW ON	onch				4	ė

King Bolts,	K 1 1	WI	0	13	ř	F	In	ų	10	. !	88	IC.	'n						0	*	
Wagon River	8. ex.	lar	g	e,	. 1	Ìπ	ŧ.	. 4	DI	78	ı l	n	n	d	Œ	tı	ы	eı	D.	le	20
head, in.	diam.	al	1	le	E	ıg	tl	16	١.		è	. ,			,						84
Wagon Rive	& Na	In Oa		a ln	IS	n	1.	1	8.	1	Ie	T	ı	,t	h	8.		0		100	
	66	1.50	*	n	2	5	3	'n	iv.	OH OH	DM SEC	'n	м	4		-				*	-
Wagon and I	Hinge	NI	M	ls		34	1	n												. #	1
Double Tree	Plate	. '				8-	16	5	le	١.								0	٠		64
Coupling	Linec					• •							0						۰		44
Tongue	4.0				ì												ľ	ï			4.6

DETROIT.

(Reported by Messa	8 - Jewett & Root.)
TinPlate, -Best Charcoal	Solder,-No. 1 160
IC. 10x14	No. 2 166
IX, 10x14 13 75	Sheet Zinc
XX,10x14 16 50	In any quantity 10%
IC. 12x12 11 50	Bright Wire.
IX. 12x12 14 25	63 lbs, in bdl dis 40 9
IC. 14x20 12 00	Copper
IX. 14x20 14 75	Sheathing31c
XX.14x20 17 50	Copper Bottoms82e
XXX, 14x20 20 25	Planished Copper.
XXXX, 14x20 23 00	Sheathing, 14x4838
DC. 100 Plate 10 50	Boffer Size, No. 7 40
DX. " 18 25	" " No. 8 40
DX. " 18 25 DXX. " 16 00	" " No. 940
DXXX " 18 75	Sheet Iron.
DXXXX 100 Plate 31 50	No. 18 Am. Com 4 4
IX, 14x14 22 75	No. 24 Am. Com4 6
IC, 10x14 W 10 50	No. 26 Am. Com4 9
IX. 10x14 W 13 25	Patent Planished Russi
Roofing Tin Best Char.	Nos. 24, 25 and 26140
IC, Terne, 14x20\$10.25	Genuine Russia. No. 9, 10
IX. " 14x20 13 (0)	11 and 1218
IC, Terne, 20x28 22 00	Broken bdis. %c. extra.
IX, " 20x28 27 00	W. D. WOOD'S & CO. & SHEET
Coke Tin	IRON
IC, 10x14 Coke \$10 00	Nos. 15 to 20 Smooth \$5 1
IX, 10x14, Coke 12 75	21 to 24 5 8
IC, 14x20, " 11 00	" 25 & 26 5 50 " 21 to 21 Char'l 6 8
Pig Tiu	" 25 & 26 " 7 0
Large Pigs26c	20 00 20 70

Send 50 cents for 6 samples (Prepaid) of HAMMOND'S WINDOW

SPRINGS

Gold Medal at Md. Ins. Exposition, Oct. 1874.

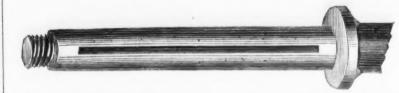
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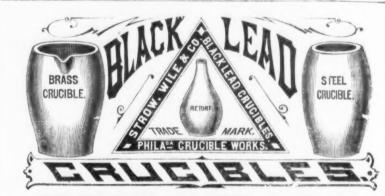
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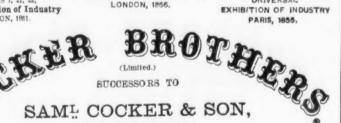
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Augers Watrous Ship. dis 10 \$ L'Hommedien Ship. dis 15 \$ Axes Forester's Favorite, Bronzed. \$12 00 Biue Jackets, Biue 11 5 Excelsior, Biack 11 00 Chopper's Price, Bronzed. 10 50 Vool 10 10 10 10 10 10 10 10 10 10 10 10 10	Weig Wed Wire Euro Wire Drai
Chopper's Price, Bronzed. 10 50	Wre Wal Writ
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A (Extra, \$250. B (No.1) \$200. C (No. 2) \$1:50 \$\psi\$ dos Bells, Steigh — Fancy Body, Patent Leather, Cloth Bound, White Metal, 30. No. 1. Fancy Body, Patent Leather, Cloth Bound, White Metal, 46. No. 1. Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1. Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1. Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Shaft, Strap, White Metal, House Bells, extra, 6, No. 1. Common, 6. No. 1. Blind #jinges.— Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Shaft, Strap, White Metal, House Bells, extra, 6, No. 1. Common, 6. No. 1. Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Shaft, Strap, White Metal, House Bells, extra, 6, No. 1. Blind #jinges.— Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Shaft, Strap, White Metal, House Bells, extra, 6, No. 1. Blind #jinges.— Fancy Body, Patent Leather, Leather Bound, Siver Plated, 30, No. 1. Shaft, Strap, White Metal, House Bells, extra, 6, No. 1. Blind #jinges.—	Eur
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Orr or Washburn's per hundred sets \$9 50 Blind Fasts. Orr or Washburn's per hundred set \$6 00 Boits. Carriage. Phila. Girar Works. dis 30&10 8 Borax. Best Refined. \$ 5 15c Horers. dis 30 8 Boring Machines. Angle. each \$4 75 Common Snell's onality each \$4 75 Common Snell's onality dis 400 8 dis 400 8 dis 400 8 Spofford's dis 50 8 dis 50 8 dis 50 8 Brackets. Star Bronzed. dis 50 8 dis 50 8 Store Shelf. dis 30 8 dis 50 8 dis 50 8	Plat iroi Stee
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No. 1, Iron Handle. 84'00 No. 2, Wood Handle. 4'50	Pig Ban
\(\text{Vrought Narrow Buttes} \) \(\text{dis 30 \cdot V} \) \(\text{can tipe ners — Sprague's} \) \(\text{dis 30 \cdot V} \) \(\text{No. 1. Iron Handle} \) \(\text{No. 2. Wood Handle} \) \(\text{Vrought No. 2. Wood Handle} \) \(\text{Cartridge Co.'} \) \(\text{dis 506.10 \cdot C} \) \(\text{Chisels.} \) \(\text{-"Buck Bros.' Shar \cdot Goods. \) \(\text{add 20 \cdot 22\cdot S} \) \(\text{Socket} \). \(\text{Churns.} \) \(-1 \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(-1 \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(-1 \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(-1 \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(-1 \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(\text{Job tipe s} \) \(\text{Churns.} \) \(\text{Job tipe s} \) \(\text{To socket} \) \(\	Stre
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Fancy Japanned, No. 4, 15 in., \$8.00; 5, 16 in., \$9.00; 6,	Appl
Fancy Galvanized, No. 4, 15 in., \$11.50; 5, 16 in., \$13.00; 6, 17 in., \$14.00.	Axe
Perfection, Jap'd, No. 4, 15 in., \$12.00; 5, 1 in., \$13.00; 6, 17 in., \$14.00. Perfection, Galv'd, No. 4, 15 in., \$15.00; 5, 16 in., \$16.00;	TX.
Ferrection, Gaiv d. No. 4, 15 in., \$1200; 5, 16 in., \$1400; 6, 17 in., \$1700. Morning Glory, Jap'd, No. 4, 15 in., \$1200; 5, 16 in., \$1800; 6, 17 in., \$1440. Morning Glory, Galv'd, No. 4, 15 in., \$1500; No. 5, 16 in., \$1600; No. 6, 17 in., \$1700. Compasses and Dividers,—Bemis'	Н.
in., \$16:00: No. 6, 17 in., \$17:00: No. 5, 16 Compasses and Dividers.—Bemis'	Axie
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Deep Flange.-\$8 50

Single, 10.	Sec.	\$1.0	\$1.13	Sach								
Double, \$1.0	1.13	1.25	1.25									
Inside Iron Stapped Blocks	7	10										
Single, \$1.00	1.18	1.38	2.60	2.45	1.75	sach						
Double, 1.26	2.20	2.45	3.64	4.00	5.00							
Inside Iron Strapped Blocks, with Patent Roller Bushings	6	8	9	10								
Inside Iron Strapped Blocks, with Patent Roller Bushings	6	8	9	10								
Single, \$1.25	1.50	1.65	2.50	2.65	3.50	cach						
Inside Iron Strapped Blocks, with Patent Roller Bushings	6	8	9	10								
Planted Ware	Roller Bushings	8	10	1.65								
Planted Ware	Roller Bushings	8	10	1.65								
Planted Ware	Roller Bushings	8	10	1.65								
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Planted Ware	Roller Bushings	8	10	1.65								
Planted Ware	Roller Bushings	8	10	1.65								
No. 3, Iron Pocket	Levels	1.65	1.65									
No. 4, Level and Plumb Gissaes								
No. 5, Iron Pocket Levels, per square and straight edge								
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Alie (Waru Hoor					
Rivets	Black			
Ruhter Model			
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Ruhter
Wheeler, Madden & Clemson X Cuts..... 60c
"Champion X Cut." 60c
"Champion X Cut." 60c
Boynton's genuine Lightning X Cut......per ft., 60c
Circular—Wheeler, Madden be Man X Cut...ach, 82 25
Circular—Wheeler, Madden & Clemson'sdis. 25 8
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| Description | St. Louis Metal Market. (Corrected Weekly by Mesars. R. Sellew & (0.) .11 90 IX, continuous,
1.8 50 20 in. x 200 rt.
1.15 iv. IC, 10x14, best
14 00 Coke. \$10
14 00 IC, 10x14, good
14 50 Coke. 9 50
18 50 IO, 10x20, 16 i0
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17 00 IC, 10x14, punch'd 10
17 10 IC, 10x14, punch'd 10
18 50 IC, 10x14, punch'd 10
19 50 IC, 10x14, pun No. 1, Renned, in ours or possess.

No. 2, Pig Lead.

Sheet Copper.—18 to 100 lbs. Sheets 50x70.

14 to 16 lbs., Sheets 50x60.

10 to 12 lbs., and 50x73.

5 to 2 lbs., and 50x73.

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	hen or cort to take to works the
Tin Plate.	14x20, 1X, Ch'l Best. \$15
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Pooting 10 Chargon	Best
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	Best
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ADA -A- CELL-	10
Black Tin.	
Large Pigs	26c Bars
Small	97c Straits %c higher
Chart Was an Idea	u lb. Casks
Zinc Sheet, and to lot	U 10. Chiks[0]
Loose Sheets	
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Braziers' Sheets.	
30x60, 6 to 8 lbs., w to	MSc 30x60, 15 to 100 lbs. 30 % 8
90x60 10 & 19 the 6	:Sc 30x60, 15 to 100 lbs ₩ % S
DUAGO, TO BE IN TOR.	roc I
Solder. F. S. & Co.'s n	make.
Best Fine	
No. 3	
NO. I	
ROOHDE	**************************************
Braziers' or Speiter So	lder
Braziers' or Speiter So	ider
Antimony	lder
Babbit Metal-F.S.	& Co.'s.
Babbit Metal-F.S.	& Co.'s.
Habbit Metal—F. S. No. 2.	de Co.'s.
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Antimony. Babbit Metal-F.S. No. 2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Babbit Metal—F.S. No.2. Sheet Iron.—	& Co.'s.
Antimony Habbit Metal—F.S. No. 2. Sheet Iron.— Common No. 24	Smooth, Smooth Smooth, Com. Charcoal, Junia, 5%c 9%c 9%c 9%c 6 c 7%c 9%c
Autimony Babbit Metal—F. S. No. 2. Sheet Iron.— Common No. 24. 4½c 25 & 26. 4½c 27. 4½c Galvanized Iron. No. 16 to 20.	Smooth Smooth Smooth Com. 1
Autimony Babbit Metal—F. S. No. 2. Sheet Iron.— Common No. 24. 4½c 25 & 26. 4½c 27. 4½c Galvanized Iron. No. 16 to 20.	Smooth Smooth Smooth Com. 1
Autimony Babbit Metal—F. S. No. 2. Sheet Iron.— Common No. 24. 4½c 25 & 26. 4½c 27. 4½c Galvanized Iron. No. 16 to 20.	Smooth Smooth Smooth Com. 1
Antimony Bubble Metal—F. 5. No. 2. Sheet Iron.— No. 24	de Co. 5
Antimony Bubble Metal—F. 5. No. 2. Sheet Iron.— No. 24	Smooth Smooth Smooth Com. Charcoal Junia 5% c 2 0 9 c 6 c 7% c 9% c 6 c 7% c 9% c 120
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Antimony Bubble Metal—F. 5. No. 2. Sheet Iron.— No. 24	Smooth Smooth Smooth Smooth Com. Com. Charcoal Junia St. Com. Charcoal Junia St. Com.
Antimony Inbbit Metal—F.5. No.2. Sheet Iron.— No. 34	Smooth Smooth Smooth Smooth Smooth Smooth Smo
Antimony Bubble Metal—F. 5. No. 2. Sheet Iron.— Common No. 24	Smooth
Antimony Bubble Metal—F. 5. No. 2. Sheet Iron.— Common No. 24	Smooth Smooth Smooth Smooth Com. Com. Charcoal Junia St. Com. Charcoal Junia St. Com.



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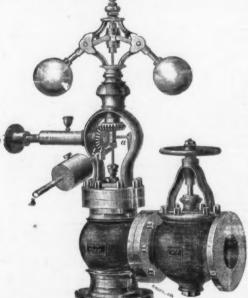
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	城	18	no	9-3	.00	17:00 19:00 29:00 27:00 31:00		
1	M M	24 29 34 41 47 50 55 62 71 81 91 103 116 184 160	00	27	.00	28.00	5.00	5-2
1	36	94	00	32	.00	21:00	2.50	6.6
- 5	78	41	00	46	.00 .00 .00 .00 .00	38.00	2 25 2 50 2 75 3 25 3 25 3 3 50 3 75 4 25 4 50 5 60 6 00 6 50 7 00 8 00 9 00 10 00	8·50 11·50 16·00 17·00 19·00 22·00
6	M M M M	47	00	54	.00		8 25	16.00
2	136	50	00	57	.00	47.00	3.50	17.00
- 5	136	00.	00	62	.00	40	3.42	19.00
5	1	63	00	70	.00	20	4.80	22 00 27 00 83 00 37 00 42 00 48 06
- 4	79	81	00	90	.00	3.	8:00	89.00
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ľ	100	103	00	114	.00	0 8	6.00	42.00
	36	116	00	129	.00	5 5	6.50	48:00
-	1	184	00	148	.00	Larger Portable ade than 2% in.	7 00	55.00
7		160	00	176	.00	35	8.00	69.00
8		199	w	219		No Larger Portable made than 2% in.	9.60	88.00
- 9		230	00	255	.00	7, "	10.00	

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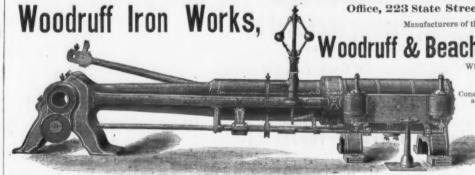
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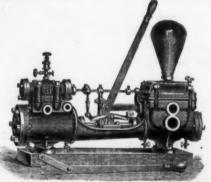
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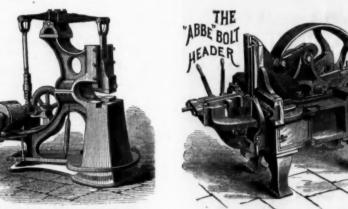
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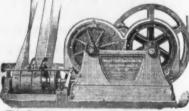
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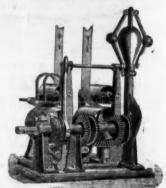


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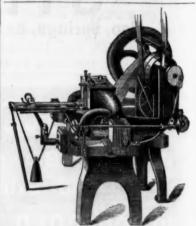
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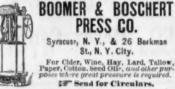
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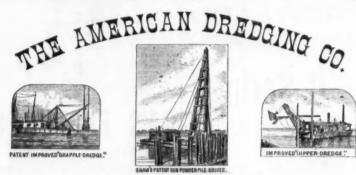
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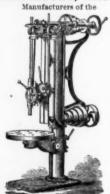
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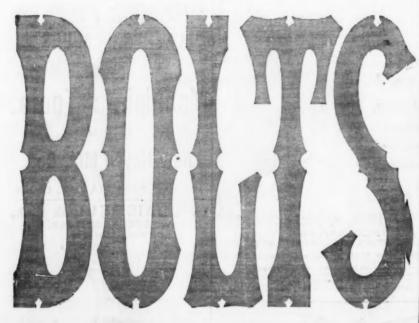
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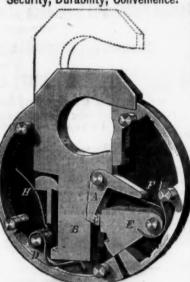
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